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ABSTRACT

A study of 1,242 children in 20 fifth, sixth, and seventh grade classes in Richmond, British Columbia, was undertaken over a seven-month period to discover the effects of a sustained silent reading program (SSR) on the students. Ten classes and the four schools they were in participated in the SSR group and ten classes selected from five other schools judged to be comparable in terms of teaching staff characteristics, student ability, socioeconomic level, type of instructional program, reading achievement and general achievement, attitude toward school, library facilities, and home environment made up the comparison group. Pretest results indicated that scores fell across the entire range of reading achievement and attitude level with good initial equivalency between the two groups. It was found that neither reading nor attitude scores were affected by the treatment. Neither was any effect found for grade level or sex differences between the two groups. It was suggested that perhaps better modelling by the teachers in the SSR group might have created a greater effect, a longer treatment period might have changed the results, and different measures might have shown different results. (TJ)

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AN EVALUATION OF THE EFFECTS OF A PROGRAM OF SUSTAINED SILENT READING (SSR) ON READING ACHIEVEMENT AND ATTITUDE TOWARD READING IN INTERMEDIATE GRADES

FINAL REPORT

Richmond SSR Project

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
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Dr. Edward G. Summers
Faculty of Education
University of British Columbia

February, 1979

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CHAPTER I

BACKGROUND, PURPOSE, GENERAL DESIGN

Background and Purpose

The objective of the curriculum research reported here was to investigate the effect of introducing a program of sustained silent reading (SSR) on reading achievement and attitude toward reading in Grades 5, 6 and 7. In 1970 Hunt described the concept of uninterrupted sustained silent reading (USSR) in an article discussing the influence of interest and motivation on reading development. USSR provides children with the opportunity to read on their own using books they have selected. The technique requires that children sustain their reading within the structure of a simple set of rules which govern the conduct of a special period set aside for USSR during the school day. The teacher also reads and the required period is usually scheduled schoolwide. More recent adaptations have developed various acronyms and proponents such as Oliver (1970), McCracken (1971, 1972), Petre (1971), Mork (1972), Ganz and Theofield (1974), Allington (1975, 1977), McCracken and McCracken (1978), and Gambrell (1978) recommend adoption of programs in both elementary and secondary schools. The concept of sustained silent practice has also been extended to other language arts activities (see Oliver, 1970; Allington, 1975; Cunningham and Cunningham, 1976) and recent writing has even advocated use of the sustained practice model by parents in the home.

Programs of sustained reading practice have proliferated and many school districts in Canada and the United States have implemented versions of USSR. The technique is increasingly described in textbooks and curriculum guides at all levels. Amid this surge of activity, reports often give high marks to the benefits of USSR but such reports tend to be ex cathedra in nature and provide little hard data to support the claims made. Some research has been reported (see Oliver, 1970; Hanson, 1972; Petre, 1971; Wilmot, 1975; Evans and Towner, 1975; Mikulecky and Wolf, 1977; Wolf and Mikulecky, 1978) but further study is needed to operationally define the benefits of USSR and examine its effects on children. Efforts to evaluate the effects of USSR programs should include more than cognitive assessment as proponents argue that the sustained reading model enhances goals for pupil growth which may be beyond the measurement scope of achievement tests alone. Consequently, a thorough evaluation should include affective measures, such as attitudes toward reading, as a valued outcome.

General Research Design

Research hypothesis. This study was conducted by the Richmond School District to obtain data to describe the general level of reading achievement and attitude toward reading in intermediate grades and to determine the effect of introducing a program of sustained silent reading (SSR). In addition, data were collected to indicate the general categories of books children like to read and to determine variations in reading preference by grade level and gender. The study hypothesized that no differences would be found in comparing schools using sustained silent reading (SSR) with regular programs operating in comparable schools (NSSR) on standardized and informal measures of reading achievement and attitude toward reading.

The following null hypotheses were established for statistical evaluation:

> HYPOTHESIS 1
>
> There will be no significant differences on posttest reading achievement and attitude mean scores in comparing intermediate grade children participating in a systematic program of SSR with comparison group children following regular school programs (NSSR) with posttest mean scores adjusted for possible pretest differences through covariance techniques (Treatment Effect).
>
> HYPOTHESIS 2
>
> There will be no significant interactions in comparing Grade 5, 6 and 7 scores by treatment (Treatment by Grade Interaction).
>
> HYPOTHESIS 3
>
> There will be no significant interactions in comparing male and female scores by treatment (Treatment by Gender Interaction).

The pretest-posttest design. The design is quasi-experimental in nature consisting of treated and untreated groups, nonrandom formation of groups and pretest and posttest measures. The pretest-posttest design, with or without random assignment, is the most commonly used design in evaluation research.[1] When random assignment to groups is not possible, the most feasible model is the non-equivalent control group pretest-posttest design. The classic work by Campbell and Stanley (1966) states such a design includes:

> . . . an experimental group and a control group both given a pretest and a posttest, but in which the control group and the experimental group do not have pre-experimental sampling equivalence. Rather, the groups constitute naturally assembled

---

[1] Fitz-Gibbon and Morris (1978) provide good discussion of the "ubiquitous" pretest-posttest design in evaluation research and the use of non-equivalent control group version while Cooke and Campbell (1976) present extensive discussion of the use of the quasi-experimental design paradigm in field research settings.

> collectives such as classrooms, as similar as availability permits but yet not so similar that one can dispense with the pretest. The assignment of X to one group or the other is assumed to be random and under the experimenter's control. . . . The more similar the experimental and control groups are in their recruitment, and the more the similarity is confirmed by the scores on the pretest, the more effective the control becomes. Assuming that these desiderata are approximated for purposes of internal validity, we can regard the design as controlling the main effects of history, maturation, testing and instrumentation, in that the differences for the experimental group between pretest and posttest (if greater than that for the control group) cannot be explained by main effects of these variables such as would be found affecting both the experimental and control groups. (pp. 47-48)

Several alternatives have been advanced in the literature for assessing the differences between treated and non-treated groups in the nonequivalent control group design. These include (a) analysis of variance and covariance, (b) raw change score analysis, and (c) standardized change score analyses of various types (Kenny, 1975; Wildt and Ahtola, 1978). The first alternative has been adopted for this study. Analysis of variance contrasts the means of different groups while adjusting for the spread within each group. Analysis of covariance contrasts the means while adjusting for both the spread within groups and some other variable or variables. The posttest is regressed on the pretest and the residual from the regression taken as the dependent variable with a correction made for attenuation.

Decision model. Tests of significance can be used to evaluate the effect of the SSR program. Although their use is controversial in more theoretical and basic research (Rozeboom, 1960; Lykken, 1968; Gold, 1969; Morrison and Henkel, 1970), they do provide useful information in applied research aimed at providing answers to immediate questions. In using tests of significance to test an hypothesis a standard procedure is followed. The hypothesis is assumed to be true (in essence, we expect zero differences although they are seldom exactly zero) and data are collected from the real world to provide a test of its truthfulness. If the real world corresponds to the hypothesis, we continue to believe it. If the collected data do not correspond, we reject the hypothesis.[2] Tests of significance provide a way of establishing the degree of correspondence we expect between the hypothesized world and the data collected in terms of the criterion of chance factors.

One difficulty we immediately encounter in following this procedure is the fact that our data have not been selected randomly from a large population thereby violating a fundamental assumption in significance testing. (There is some support for the notion that in using tests of significance in the real, rather than the theoretical, world too much concern for statistical assumptions may be unwarranted. Depending on the use we wish to make of them, our statistics may be more robust than we think.) Without being too technical, in this instance we play a game and assume the data collected constitute a population, i.e., the data define the population. In essence, we are assuming the schools in the two treatments were selected randomly from all the elementary schools in the district and that the treatment was assigned randomly to the two groups of schools. This allows us to use a probability test to determine if differences between sample means is due to sampling error; that is, can the differences be attributable to chance or do other factors enter to explain them. This may not be too elegant for basic research where we would be greatly concerned if we could not assume we are dealing with a probability sample from a clearly defined existing universe. However, we are not attempting to develop causal interpretations. The game does allow us to think of our data as if they constitute a random sample from a larger universe. We of course would be wrong in generalizing too far from the data but our major purpose is to develop insight into effects within the Richmond schools only.

---

[2] In the analysis of the results, possible alternative explanations have to also be considered.

We can never accept a null hypothesis (in research we can only prove something is not so). Our alternatives are to reject the null hypothesis[3] or fail to reject it. No alternatives to the null hypotheses for the SSR study have been specified. There is no theoretical basis for stating, in advance, that if we fail to accept the null hypothesis it will be in favor of the SSR or the NSSR group. Without a specific alternative hypothesis, we cannot specify the statistical power of the study. Such specification is seldom possible in the social sciences, especially in education.

In comparing the results we collect from the real world with our hypothesized expectations, we do so in light of the amount of variation which can be expected on the basis of chance factors. The test of significance allows us to use probability to decide (1) are the results close enough to the hypothesized situation to conclude that the difference between the two treatments is due to chance and we have no grounds for doubting the null hypothesis, or (2) are the differences so great that we can no longer attribute them to chance (sampling error) but must attribute them to the fact that the null hypothesis is for some reason false? The problem lies in defining what we mean by "differences so great" in the above. Selection of the level of significance is a totally arbitrary decision. Convention dictates specifying the .05 or the .01 level. However, this presents an illusion of precision and good judgment has to always be exercised in interpreting the significant, non significant and near significant results of a study. In general, the smaller the level of significance (or "p" value) the less the probability that chance played a role and the greater the confidence that the treatments did. For this study, TYPE I error was set, a priori, at .05 meaning that any result which occurs with a probability of .05 or less will be considered sufficient evidence to reject the null hypothesis.

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[3] Some prefer "fail to accept" rather than reject.

There are risks in using the decision procedure. The incorrect rejection of a true null hypothesis (assuming, falsely, that a difference exists between SSR and NSSR when in fact it does not) is labelled a TYPE I error and the probability of such an error is equal to the level of significance. Since it can be very embarrassing for researchers to state that there are differences when in fact there are none, they are particularly keen to guard against TYPE I error and a conservative probability level is set to minimize it.[4] With a low p value, there is relatively little risk of saying SSR has an effect when in fact it does not. A second error is labelled TYPE II error, failure to reject a false null hypothesis (assuming, falsely, that a difference does not exist between SSR and NSSR when in fact one does exist). In order to estimate TYPE II error, a possibly true alternative to the null hypothesis must be specified. It is rarely possible in education to specify such an hypothesis (as in this study) so the power of the study (1-the probability of a TYPE II error) remains unspecified. As pointed out in several sources, there is some consolation in knowing that if alpha is .05, there is at least a .05 probability of detecting a false null hypothesis. Most researchers simply set a reasonably strict level of alpha to control TYPE I error. TYPE II error is minimized by following good experimental procedures and maximizing the internal validity of the study.[5]

---

[4] Replication of the study provides another way to assess the possibility of TYPE I error. It has been suggested that only differences significant at .001 and beyond be taken seriously. However, such practice would preclude examination of useful results in many studies and the risk of TYPE II error also rises as alpha is increased. All data analysis is a constant trade-off between TYPE I and TYPE II error. Whether to run the risk of a TYPE I or TYPE II error is a matter of utility. The .05 level is a moderately strict criterion for TYPE I error yet allows for some avoidance of TYPE II as well.

Educational and statistical significance. The "null" in failing to reject a null hypothesis should not be taken to mean that the results of the study are of no value at all.[6] Researchers should consider the educational as well as the statistical significance of the study. Educational significance can accrue even if no statistically significant results emerge. Figure 1 illustrates the decision process to be followed in assessing the educational and statistical significance of the results. In order to claim an effect, mean score differences on the order of one-quarter to one-third standard deviation should occur.

---

[5] In this study, such procedures included: use of a relatively large representative population; keeping treatments independent by using intact schools and classes; developing a well defined SSR program; use of inservice orientation and implementation workshops to standardize assessment procedures, coordinate the project, and insure uniformity in treatment application; use of focused interviews during the course of the study to check fidelity of the treatment application and detect implementation problems; conducting the treatment for a reasonable length of time; selection of reliable cognitive and affective measuring instruments with good psychometric properties and careful development of informal measures; controlling for variation between the participating classrooms by careful formation of groups; investigation of possible treatment effects in terms of factors known to influence reading achievement and attitude formation; and, use of a covariance design to increase control over possible population differences.

[6] In scientific research, Platt (1964) suggests that knowledge can also accrue from disproved theories or hypotheses as well as cases where the null hypothesis is rejected. The consequences of too strong a prejudice against research which results in failure to reject the null hypothesis have been succinctly discussed by Greenwald (1975). In his recent analysis of the yield of research on teaching, Gage (1978 a,b) concludes that research can produce important cumulative effects even though individual studies may be flawed or inconclusive ". . . we look for studies that do not overlap in their flaws but do overlap in their implications."

Direction of differences	Covariance adjusted differences between SSR and NSSR programs	
	significant at .05	not significant at .05
Differences favor the SSR program	Results are statistically and educationally significant.	Results are educationally but not statistically significant.
	Results are statistically significant but not educationally significant.	Results are neither educationally nor statistically significant.
Differences favor the NSSR program	Results are statistically and educationally significant.	Results are educationally but not statistically significant.
	Results are statistically significant but not educationally significant.	Results are neither educationally nor statistically significant.
Differences favor neither the SSR nor the NSSR program		Results are educationally but not statistically significant.
		Results are neither educationally nor statistically significant.

Figure 1. Decision model for assessing the statistical and educational significance of treatment differences

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CHAPTER II

METHODOLOGY AND PROCEDURES

Schools

The schools included in the study are located in Richmond, British Columbia. The district is coterminous with the city of Vancouver and the community could be classed as typical suburban-residential-light industry and is representative of communities surrounding large metropolitan areas throughout North America. Grade 5, 6 and 7 classes from a total of nine elementary schools formed the population of the study. Practicality and limited financial resources precluded working with all 29 elementary schools and conducting a district wide implementation and evaluation of SSR. The decision was made to organize the study so that approximately 20 SSR and NSSR classrooms were included at each of the three grade levels. In all, roughly 25% of the total Grade 5, 6 and 7 children in the district participated in the study.

SSR in its generic form is recommended as an all class total school activity. This required working with intact classrooms and intact schools in forming the SSR and NSSR groups. It was not possible to incorporate traditional statistical control and randomly assign class or school groups. It is also highly likely in field research that effects will be created even before the study begins if large units are blindly assigned on a strictly random basis. Thus, schools were judgmentally selected to form the two treatment groups. This was accomplished at meetings of elementary principals and district consultative staff held in October, 1977. The SSR treatment group consists of four schools whose classes were judged to be representative of the Grade 5, 6 and 7 population in the district on variables such as teaching staff characteristics, student ability, socioeconomic level, type of instructional program, reading achievement and general achievement, attitude toward school, library facilities and home environment. Staff in the four schools were interested in participating in the field study and their building programs were such that research could be conducted without unduly disrupting schedules or adding an excessive burden in terms of staff responsibilities. Schools were then selected from those remaining to form a comparison group consisting of schools which closely resembled the SSR schools on the variables listed above. The selection procedures followed provided a group of schools which added SSR to their programs and a comparison group of schools which pursued their regular programs. Thus, the competing model to SSR becomes the array of regular programs operating in the NSSR schools.

A total of five schools were eventually included in the NSSR group to provide the requisite ten comparison classes at Grades 5, 6 and 7. The total population for the study consists of nine intact elementary schools, divided into an SSR and an NSSR group, with an equivalent number of children in each group contained in intact classrooms. Later data from single factor analyses of variance on pretest scores in treatment, grade and gender comparisons revealed that good initial equivalency was achieved in forming the two treatment groups. Normality data from the testing results also indicates that the scores fall across the entire range of reading achievement and attitude level with some slight piling of scores at the above average end of the distribution.

NSSR schools followed their regular programs but received exactly the same tests as the SSR schools. SSR was implemented in all grades in the experimental schools but the evaluation took place in Grades 5, 6 and 7 only. Late in the elementary school years, or early in the secondary grades, most children reach their peak of active reading. The study focused on the intermediate years because they are the crucial swing grades in developing higher order reading skills and building lifetime habits of recreational and interest reading.

Design and Statistical Analysis

Figure 2 illustrates the five factors in the study (treatment, school, grade, class and gender) and the hierarchical characteristics of the population from the class through the school level. A major question in program evaluation research concerns the specification of an appropriate unit of analysis. In the design, several levels of data aggregation were possible including the individual child, the classroom, the grade, or the school. If the SSR project were being carried out in several communities, the district could also be considered the unit of analysis. Cronbach (1976) argues that analysis units such as classrooms or schools should be used to satisfy the statistical assumption of independent units. The aggregation issue presents a knotty problem in evaluation research and has generated considerable debate. Evaluation methodologists often disagree as to the appropriateness of various designs in evaluation research. Recent reviews of large-scaled evaluation studies provide extensive discussion of the aggregation problem (e.g., Gage, 1978 a,b; Kennedy, 1978; House et al., 1978; Anderson et al., 1978; Wisler, Burns and Iwamoto, 1978; Hodges, 1978) and it is

Treatment	SSR												NSSR														
School	S1			S2			S3			S4			S5			S6			S7			S8			S9		
Grade	G5	G6	G7	G5	G6	G7	G5	G6	G7	G5	G6	G7	G5	G6	G7	G5	G6	G7	G5	G6	G7	G5	G6	G7	G5	G6	G7
Class	c1 c2	c3 c4 c5	c6 c7 c8	c9 c10 c11	c12 c13 c14 c15	c16 c17 c18 c19	c20 c21	c22 c23	c24 c25	c26 c27	c28 c29	c30 c31 c32	c33 c34 c35	c36 c37	c38 c39	c40 c41	c42 c43	c44 c45	c46 c47 c48	c49 c50	c51 c52	c53 c54 c55	c56 c57 c58	c59 c60 c61	c62	c63 c64	c65
Male	c1 6 c2 9	c3 12 c4 5 c5 9	c6 10 c7 8 c8 3	c9 16 c10 5 c11 12	c12 6 c13 8 c14 14 c15 13	c16 8 c17 15 c18 6 c19 9	c20 8 c21 12	c22 10 c23 9	c24 14 c25 12	c26 6 c27 15	c28 5 c29 9	c30 14 c31 13 c32 10	c33 5 c34 4 c35 13	c36 9 c37 9	c38 7 c39 10	c40 8 c41 7	c42 10 c43 7	c44 17 c45 12	c46 9 c47 6 c48 7	c49 8 c50 10	c51 9 c52 9	c53 10 c54 14 c55 9	c56 10 c57 9 c58 10	c59 11 c60 12 c61 11	c62 9	c63 6 c64 10	c65 8
Female	c1 7 c2 13	c3 9 c4 4 c5 9	c6 10 c7 12 c8 4	c9 8 c10 4 c11 12	c12 7 c13 9 c14 13 c15 10	c16 3 c17 8 c18 14 c19 13	c20 12 c21 11	c22 8 c23 9	c24 6 c25 9	c26 7 c27 10	c28 10 c29 12	c30 12 c31 14 c32 12	c33 8 c34 6 c35 9	c36 13 c37 6	c38 13 c39 10	c40 12 c41 10	c42 11 c43 14	c44 17 c45 15	c46 13 c47 4 c48 6	c49 6 c50 11	c51 11 c52 9	c53 10 c54 11 c55 11	c56 9 c57 8 c58 10	c59 10 c60 9 c61 14	c62 9	c63 7 c64 10	c65 8

Figure 2. Illustration of factors and hierarchical levels in the study

also treated in depth in texts on evaluation (see Wittrock and Wiley, 1970; Poyner, 1974; Cooley and Lohnes, 1976).

The ultimate decision as to the unit of analysis has to be made on logical, pragmatic grounds in relation to the substantive questions being raised in the study. The question being asked is whether or not 612 SSR children improved their reading achievement and attitude scores in relation to 630 NSSR children. We would argue that the SSR treatment was being given to children and that children were responding independently of other children; particularly in light of the nature of SSR programs. SSR is a means of structuring classroom environments to foster children's independent reading of self-selected materials. It is not an instructional program employing a lot of teacher specific methodology. It must be admitted, however, that children work within the context of a class but, in managing the unique classroom and school conditions in the population which might affect the treatment comparisons by balancing sources of classroom and school influence across the two treatments, we hoped to avoid violating the assumption of individuals as independent units of analysis in the study. In light of the fact that treatments could affect maturational levels and sex differentially, the treatments are also examined to determine their interaction with these two factors.

Finally, classes in the study are not particularly large (see Figure 2) and there would be some question about making Fisherian assumptions with respect to the hypothesized population of test scores if single classes were used as the unit of analysis; in particular if single test scores serve as the criterion (as in this study). Unusual distribution shapes are likely in small classes in comparison to aggregates of larger groups. In short, a reasonable amount of variance may not exist in the criterion measures if small classes comprise the unit of analysis.

In most small-scale parochial research conducted at the classroom and district level the individual child has been the unit of analysis. Analysis of effects across a representative set of classrooms and schools also seems more programatically relevant because decisions made by policy makers with respect to adopting, continuing or terminating programs like SSR are made in terms of overall effect across the district rather than effect on any one classroom or school. Although the individual is used as the unit of analysis, data on school and class effects are also included in the discussion of the results.

Various statistical programs were used to generate descriptive data on reading preferences, achievement and attitude (SPSS, BMD). The Multivariance (Finn, 1977) statistical program was used to analyze the data organized to test the null hypotheses. Multivariance offers a flexible array of programs which can perform a variety of univariate and multivariate analyses for crossed and nested designs with equal, proportionate or disproportionate subclasses. Analyses of various contrasts can be made and analysis of covariance is also a feature of the program. Various contrasts on combinations of cells across the array in Figure 2 are possible and the program allows for decisions on main and interaction effects at both the univariate and multivariate level.

The model for the study resembles a factorial analysis of variance design but is different. Analysis of the data from the cells in Figure 2 in various combinations results in nested and crossed factors. Factors are crossed if each level of each factor appears with each level of the other factor. They are nested if each level of one factor appears in only one level of the other. In this study treatment, grade and sex are considered crossed factors and schools/treatments and class/grade/school/treatment the nested factors.

Many of the main effects and different levels of interaction contrasts that would be automatically generated in the traditional complete model of an A × B × C factorial design are of no interest in the evaluation of the SSR effect. There is no point in including results from a three factor interaction if we, first of all, would not hypothesize such an effect and, secondly, if its interpretation is not going to add to understanding the results. Thus, multivariance analysis of single effects, and their interaction with other factors of particular interest (using covariates to adjust for differences in pretest scores), seemed the most appropriate approach. Differences between treatments (Treatment Effect), differences between treatments by grade level (Treatment by Grade Interaction), and differences between treatments by gender (Treatment by Gender Interaction) can be tested in the model (see Games, 1978 for a discussion of points which influenced the development of the analysis model). School and class effects can also be examined as a matter of interest. Each null hypothesis is tested for each dependent measure providing F statistics on 18 reading and attitude scores.

Measuring Instruments

The outcome domains that seemed most desirable and practical to assess at the time the study was designed are those which can be conveniently measured in a group testing situation using recognized standardized batteries appropriate for preadolescent children. The state-of-the-art to date in attempting to determine the effects of SSR suggests that an analysis of the effect on reading comprehension and attitude toward reading is most appropriate. We resisted the temptation to fall into the "while we're at it why not also collect data on this" syndrome and analyzed only a relatively small number of educationally coherent variables which could be directly measured. Special informal measures of reading achievement, liking for reading, and amount read were also developed to supplement the standardized test results and provide data which could be used to compare standardized and informal assessment of achievement and attitude and children's and teachers' judgment of achievement and attitude. In addition, an inventory was developed to provide an indication of the categories of reading preferred by intermediate children and to illustrate grade and sex differences in reading preferences.[7]

Metropolitan Reading Test. Reading comprehension is defined as obtaining meaning from words and larger units of discourse in printed graphic stimuli. Reading comprehension was assessed by the Vocabulary and Comprehension sections of the Metropolitan Achievement Tests, Intermediate and Advanced forms (Durost et al., 1970-71). The tests consist of items which measure word knowledge (the test presents a stimulus word, children select the correct definition from alternatives) and comprehension (the test presents a paragraph, children answer multiple choice questions). Skills included in the test are considered important to literacy and should be learned by every elementary school child. The test is reliable, well normed, free of psychometric problems, has been widely used in other evaluation studies, and was not being used in any curriculum activities or assessment programs within the district at the time the study took place. The Vocabulary subtest consists of 50 items measuring extent of vocabulary comprehension covering general information, science, mathematics, social studies and humanities. The Comprehension subtest consists of 45 items measuring four aspects of comprehension including literal comprehension, drawing inferences, identifying main ideas and deriving word meaning from context. It was decided not to use the MAT total score but to use the separate Vocabulary and Comprehension scores to determine whether different patterns of effect might exist for these two aspects of comprehension.

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[7] See Appendix A for copies of all measuring instruments used in the study.

Estes Attitude Scale. Attitude is defined as the tendency to respond in a favorable or unfavorable manner to specific questions about reading. Attitude toward reading was measured by the Estes Attitude Scale (Estes, 1975). The scale consists of 15 Likert type items designed to assess various dimensions of positive and negative attitude toward reading. The scale assesses affective aspects of various subjects across middle, junior and senior secondary programs. It has a range of scores from 15 to 75 points with an approximate midpoint of 45. As is the case with most affective measures, traditional norms are not available for the Estes. Children with higher scores generally have more positive attitudes. The Estes is capable of establishing baseline data and indicating incremental change in attitude over a period of time and is one of the few standardized measures available. Good reliability and validity have been reported for the Estes and its selection was based on a careful review of published and unpublished attitude measures available at the time the study was planned (Summers, 1977).

Student Reading Rating Scale. A special informal measure was developed to supplement the standardized achievement and attitude measures. The Student Reading Rating Scale (SRRS) provides a measure of the child's perception of his reading achievement (Well), liking for reading (Like scale) and the quantity of reading done (Much scale). Children are asked to rate themselves, in comparison with their peers, on three questions using a five point Likert type scale: (1) About how Well do you read? (2) How well do you Like to read? (3) About how Much do you read? The range of scores for the scale is 3 to 15 with a midpoint of 9. Children who score themselves high feel they are good readers, like to read, and do a lot of reading in comparison with other children. Results for the SRRS were analyzed in terms of total scores and scores on each of the three scales.

Teacher Reading Rating Scales. A second special informal measure was developed to provide achievement and attitude estimates by teachers. The Teacher Reading Rating Scale (TRRS) is similar to the SRRS and asks teachers to rate children, in comparison with other children, on a five point Likert type scale in terms of: (1) How Well they read. (2) How much they Like to read. (3) How Much they read. The scores for the scale range from 3 to 15 with a midpoint of 9. High scores indicate children whom teachers feel are good readers, like to read and read a lot in comparison with other children. The results for the TRRS were analyzed in terms of total scores and scores on each of the three scales.

Reading Preference Inventory. Reading preference is defined as a disposition to prefer one category of reading over another. Reading interests can be inferred from reading preferences although interests have a more active component and represent topics and materials children actively seek to read. Thus, interest is based on materials actually read while preference relates more to reading which might be done (see Getzels, 1966; King, 1967; Robinson and Weintraub, 1973; Strickler and Eller, 1976). It has long been observed that children do not ordinarily ask for books by form or type but rather by general interest category such as romance, sports or animals. The categories represent specific motifs that often recur in stories and books.

An SSR program provides teachers and librarians with an opportunity to guide and develop the reading interests of children. Thus, they need information about children's specific reading preferences. Such preferences are apt to vary by community, age and gender. Few adequate instruments are available which can supply such information on a reliable basis. The Reading Preference Inventory (RPI) was developed to provide data on preferences of intermediate grade children using 14 categories of preference. The RPI is a paired comparison, forced choice scale which pairs each of the 14 categories with every other category and the resulting scores are summed for each preference type (Appendix A). The forced choice format was adopted after a careful review of the literature which discusses measurement problems involved in assessing preference and attitude. Short vignettes follow each item in the pair to help children distinguish among the categories. The categories appear randomly in the RPI with each category alternating an equal number of times in the first position. It takes approximately 15 to 20 minutes to administer the RPI to a classroom or an individual. A ranked listing of the general reading preferences for a group can be generated across the 14 categories which include:

Adventure, History/Geography, Animals, Children/Family, Sports, Humor, Science, Poetry, Fantasy, Biography, Travel, Romance, Nature Study, and Mystery.

The 14 categories are deliberately general and many rich genres and sub-genres of reading could be organized within each category. For example, Ashley (1978) organizes animal stories into three main categories with many links, extensions and subdivisions based on types. The RPI has strong logical validity. The 14 categories were developed, a priori, after an extensive review of the literature on reading preferences and interests of intermediate grade children. A description of the development of the instrument is contained in Summers (1978 b). Data from the RPI can be used by librarians and teachers in selecting and organizing reading materials for intermediate grade children.

Summative Rating Scale. A summative rating form was developed to collect subjective reactions to the SSR program from teachers, librarians and principals (Appendix A).

Checklists. Two special checklists, My Reading Bookcase and My Reading Record, were developed to collect data in the SSR and NSSR schools on books actually read by children, the type of book, the source of the book, and the source of recommendation for the book (Appendix A).

Two additional instruments were developed but time and resources precluded using them in the project: The Projective Assessment of Reading Attitudes (PARA) (Summers, 1978a) and the Home Reading Inventory (Shapiro, 1978). The PARA instrument is a semi projective test designed to probe more subtle reactions and attitudes toward reading through use of a picture projective technique, incomplete sentences, and stimulus vocabulary representing emotive words related to reading. The Home

Reading Inventory is a questionnaire instrument designed to assess the quality of the home reading environment in terms of access to and use of print sources by children and adults.

Six posttest scores were used as dependent variables in evaluating the null hypotheses: MAT Vocabulary and Comprehension scores, Estes Attitude Scale total score, and the Well, Like and Much scale scores from the SRRS. In all comparisons pretest scores were used as covariates.

Procedures

A complete outline of the planned activities for the project is contained in the Richmond School District SSR Project Activities Log (Appendix B). Except for minor alterations because of time, finances and staff, the log presents an accurate picture of the overall organization and implementation of the study.

Definition of the SSR treatment program. The program which is actually implemented (the independent variable) in any evaluation study must be carefully defined or as Charters and Jones (1973, p. 5) suggest ". . . elaborately designed evaluation studies may sometimes end up appraising non-events, with no one the wiser." (For a detailed examination of process models and implementation problems in curriculum evaluation studies, see the review by Fullan and Pomfret, 1977.) It was necessary to carefully define the SSR program lest it represent nothing more than a "fictional difference" when compared to the regular programs operating in NSSR schools.

Hall and Loucks (1977) provide a rather extensive conceptualization of major factors in implementing an evaluation study and point out that determining whether or not the treatment or innovation under study is well defined and actually in use is critical in making the final evaluation as to the effect of the study.[8] They describe the concept of "levels of use of the innovation" which includes an operational description and documentation of the new program and its implementation and assessment. The level of use concept provides a model for incrementing implementation and embraces eight dimensions of program sequence including Nonuse, Orientation, Preparation, Mechanical Use, Routine, Refinement, Integration, and Renewal. The categories of use have been validated by research and are described more fully in Loucks, Newlove and Hall (1975), Hall et al. (1975), and Hall and Loucks (1977). The generic concept of levels of use provided a useful paradigm for defining the SSR treatment program, establishing a way of incrementing adoption, and organizing the implementation of the project. The adaptation of the eight use levels for the SSR study is illustrated in Figure 3. A complete description of the SSR treatment and the curriculum materials developed for the project can be found in Appendix B.

At the Nonuse stage (Figure 3), suggestions for program innovation can originate through action by district administrative and consultative staff, School Board members, teachers, or combinations thereof. It should be noted that in this study the SSR project was initiated by district consultative staff and elementary school principals as a result of action by the School Board. The principals and teachers in the selected schools then agreed to cooperate in a field evaluation of the SSR model. Thus, the project resembles the Fullan and Pomfret fidelity

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[8] Morris and Fitz-Gibbon (1978) provide a useful frame of reference for measuring program implementation which includes records, observations, questionnaires, interviews and self reports. The Fullan and Pomfret (1977) analysis reviews the application of observation, questionnaires, focused interviews and content analysis of documents in determining extent of implementation.

Stage of Use	Definition	Decisions
Nonuse	Stage at which school staff have minimal knowledge of SSR as a concept, little involvement with the procedure on a systematic basis, and are not directly moving to adoption of SSR on a total school basis.	Decision Point A Take action to learn more about SSR and explore its adoption for classroom and school use.
Orientation	Stage at which school staff acquire information about SSR, explore its value as a reading motivation technique, and determine the feasibility of a tryout period in the classroom.	Decision Point B Decision made by school staff to implement SSR for a trial period.
Preparation	Stage at which school staff prepare for use of SSR, plan instructional procedures and details of implementation. Plan for coordination between teachers, librarians and administration.	Decision Point C School district provides the resources, training and necessary time to insure that school staff have requisite understanding and skills to implement SSR on a trial basis.
Mechanical Implementation	Stage at which school staff focus effort on gradual introduction of SSR, mechanics of implementation, short-term day-by-day use and adjustment to classroom and school needs. Focus is on step-by-step mastery of tasks for effective introduction and implementation of SSR. Develop coordination between teachers, library and administrators. Adult reading modelling begins.	Decision Point D A routine pattern of use by school staff has been established for SSR.

Figure 3. Incremental stages in SSR treatment adoption and implementation

Stage of Use	Definition	Decisions
Routine Implementation	School staff use of SSR is stabilized, scheduling pattern is established, few if any changes being made in ongoing use. Little thought has to be given to day-to-day implementation. Adult reading modelling is refined.	Decision Point E School and staff reflect on use of SSR and its consequences, informal evaluation to develop efficient application and improve student benefits.
Refinement	Stage at which school staff supplement and extend use of SSR throughout language arts activities within classroom and school environments based on short and long term consequences for students. Adult reading modelling is consistent.	Decision Point F School staff initiate refinements and modifications in use of SSR and coordinate with colleagues for maximum effect.
Integration	Stage at which school staff are combining own efforts with colleagues, using related activities to achieve collective impact on students. Adult reading modelling continues.	Decision Point G Continued refinement and modification in use and coordination of SSR with colleagues to maximize benefits to students.
Adoption	Stage at which decision is made to implement SSR as a recommended language arts activity on a scheduled basis.	Decision Point H Decision to adopt SSR based on evaluation and feedback from school staff.

Figure 3. continued

rather than the mutual adaptation process in curriculum change. However, a certain amount of co-decision was operating throughout the project.

Orientation and implementation workshops. Two released time inservice workshops were held to provide orientation and initiate the project (Hall, 1976). The Orientation Workshop served to provide background and introduce school staff to the project. All staff and administrators in each SSR school were invited to participate even though the eventual SSR evaluation was to take place just in the intermediate grades. Separate workshops were held in each of the four schools in December of 1977 (see Orientation Workshops Agenda, Appendix B). The first workshop included introduction of the SSR concept, discussion of the goals of the study, distribution of the working paper on implementation and other related literature, discussion of definitions of reading preference, interest and attitude within the acceptance model of attitude formation as outlined by Mathewson (1976), and, explanation of the development and use of the RPI. At this workshop school staff were also encouraged to think about the best time for scheduling SSR as an all school activity in their buildings.

The December workshops were followed by separate Implementation Workshops, again scheduled on a released time basis, held in each of the four SSR schools early in January of 1978 (see SSR Implementation Workshops Agenda, Appendix B). In these workshops the project goals were again reviewed, individual and group RPI profiles were returned for each class, and use of RPI results in relating SSR, reading preferences and the school library discussed (see Appendix B). Further discussion of the working paper describing the implementation of the SSR treatment was also held and details worked out for the gradual application of the model in each school with respect to the role of the principal, teachers and librarians. Administration of the pretest Student Reading Rating Scale and the Metropolitan Reading Test was planned and use of the My Reading Bookcase and My Reading Record in the SSR and NSSR schools discussed. The June posttesting schedule was also tentatively planned. Each school finalized the scheduling of the SSR period in their school with one school scheduling SSR first thing in the morning, one school scheduling first thing in the afternoon, one scheduling later in the morning, and the fourth school, with intermediate children housed in several portables, scheduling SSR at a variety of times to accommodate the programs of the individual teachers. Shortly after the Implementation Workshops, librarians in the SSR schools received additional funds to supplement their fiction offerings. Results from the RPI were found useful in book selection.

Testing schedule. All testing in the project was done by classroom teachers, principals and vice principals. Instructions were carefully followed to insure reliability. The RPI was administered in December, 1977 to provide results for use in the January workshops. In all instances attitude measures were administered prior to achievement tests and on separate days. To avoid a too tight testing schedule at the start of the SSR implementation in January, the Estes Attitude Scale and the Teacher Reading Rating Scales were administered to all nine schools in December and the MAT and the Student Reading Rating Scale were administered in January upon completion of the Implementation Workshops and just prior to beginning the SSR activity. Testing was scheduled over a two week period in December and January to adjust to scheduled activities in individual schools, allow adequate time for follow up testing, and accommodate a heavy spate of illness at that time in some of the project schools.

A posttest administration of the RPI was done in January using a representative sample of children (n=300) drawn from across the nine schools to provide reliability data. Final posttesting using the MAT, the Estes Attitude Scale and the SRRS was done over a two week period in all SSR and NSSR schools in early June just prior to the end of the school year. Data on the summative evaluation form were also collected at that time from all staff in the SSR schools.

Monitoring the SSR program implementation. Focused interviews (Foster and Nixon, 1975; Loucks, Newlove and Hall, 1975) were held in March and April with the participating principals, teachers and librarians in all SSR schools. The interviews were scheduled at approximately the end of the Mechanical Implementation stage in Figure 3. Interviews were individual and relaxed but did focus on obtaining specific answers to a series of questions related to: feedback on the mechanics of implementation, reaction of children to SSR, library utilization, home response, aspects of all school scheduling, use of the RPI and My Reading Bookcase, analysis of pretesting, reactions to the two workshops, expressed needs and problems in relation to the project, and a preview of the planned posttesting. The interviews also served to provide a forum for a discussion of general problems and reactions relative to the value of SSR and the overall conduct of the project. Due to time pressures, only one series of focused interviews was held whereas two had been originally planned. The summative evaluation form was later developed as a substitute to provide staff with an opportunity to make an overall subjective evaluation of the project and its effects upon completion of all SSR activity in June.

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CHAPTER III

FINDINGS

Demographic Data

The final population of the study. The final population consists of 1,242 children who had pretest and posttest scores on all measures. Attrition from pre to posttesting was approximately 18% consisting mainly of children who moved from and within the district and those who were absent from one or more of the three testing sessions. In some split grade classes the total number of cases equalled less than 6 and they were removed from the study resulting in a loss of 17 cases. The 18% loss is somewhat higher than the attrition rate experienced in the regular testing programs of the district. However, it should be borne in mind that to be included in the analysis children had to be present at all three testing sessions scheduled over a seven month period. Roughly equivalent numbers of SSR and NSSR children were lost and further examination of the missing cases revealed no undue clustering in any one school, grade or treatment.

Equivalence of the SSR and NSSR groups. Sixty single factor analyses of variance were performed, using seven achievement and attitude scores, on combinations of treatment, grade and gender to determine the relative initial equivalence of the two treatment groups. Table 1 presents the results (mean scores are available but not reported here). Significant differences ($p < .05$) were found on only

Table 1. Summary ANOVA results comparing SSR and NSSR by treatment, grade and gender on pretest mean scores

		Metropolitan				Estes		Student Reading Rating					
		Voc		Comp		Tot		Well		Like		Much	
Comparison	df	F	p	F	p	F	p	F	p	F	p	F	p
SSR vs NSSR	1, 1,240	.42	.51	.02	.87	3.61**	.05	.00	.94	.70	.40	.33	.56
GR5 SSR vs Gr5 NSSR	1, 381	.89	.34	1.24	.26	1.13	.28	.19	.65	.35	.55	.69	.40
Gr5 SSR male vs Gr5 NSSR male	1, 188	.30	.58	3.57**	.06	1.15	.28	.77	.38	.16	.68	.00	.98
Gr5 SSR female vs Gr5 NSSR female	1, 191	.68	.40	.19	.66	.03	.84	.08	.76	.36	.54	1.09	.29
Gr6 SSR vs Gr6 NSSR	1, 401	.03	.84	.50	.47	.24	.62	.98	.32	2.11	.14	.45	.50
Gr6 SSR male vs Gr6 NSSR male	1, 196	.79	.37	.00	.98	.47	.49	1.97	.16	1.12	.28	1.58	.20
Gr6 SSR female vs Gr6 NSSR female	1, 203	.40	.52	1.19	.27	1.88	.17	.00	.98	1.19	.27	.06	.80
Gr7 SSR vs Gr7 NSSR	1, 381	.89	.34	1.24	.26	1.13	.28	.19	.65	.35	.55	.69	.40
Gr7 SSR male vs Gr7 NSSR male	1, 221	.03	.86	.20	.65	.06	.80	.10	.75	.22	.63	.02	.88
Gr7 SSR female vs Gr7 NSSR female	1, 231	.30	.58	.61	.43	4.84*	.02	.00	.98	.01	.92	.21	.64

*Significant at .05
**Approaches significance

one out of 60 comparisons of mean pretest scores (Grade 7 SSR vs NSSR, females, Estes Attitude Scale) with only two comparisons approaching significance (Grade 5 SSR vs NSSR, males, Comprehension; SSR vs NSSR Estes Attitude Scale). The small number of significant F's supports the assumption that although the SSR and NSSR groups were not randomly formed they are at least generally comparable on the major characteristics examined in the study.

Teacher/principal characteristics. Teachers in the SSR and NSSR schools were fairly equivalent in terms of TQS category (SSR=5 at level 3, 14 at 4, 12 at 5, 1 at 6; NSSR=1 at level 2, 5 at 3, 12 at 4, 15 at 5); years of teaching experience (SSR average = 5.0, NSSR average = 8.3); number of degrees (SSR=24 Bachelors, 1 Masters; NSSR=25 Bachelors, 1 Masters); and, gender (SSR=15 male, 17 female; NSSR=17 male, 16 female). Principals were also fairly equivalent in TQS (SSR=1 at level 5, 3 at 6; NSSR=1 at level 4, 3 at 5, 1 at 6); years of experience (SSR average = 27.5; NSSR average = 22.6); and, type of degree (SSR=1 Bachelors, 3 Masters; NSSR=4 Bachelors, 1 Masters). All principals were male. In summary, teachers in the two groups were fairly equivalent in terms of TQS category, type of degree and gender with the NSSR teachers tending to be somewhat more experienced. SSR principals had slightly higher TQS levels and degree qualifications and tended to be more experienced than NSSR principals.

Overall Mean Raw Score Results

Reading and attitude. Pretest and posttest means and standard deviations for the reading achievement and attitude measures for the SSR and NSSR groups appear in Table 2. Vocabulary was scored on the basis of the number correct out of a possible maximum of 50 items.

Table 2. Pre and posttest raw score means and standard deviations for seven outcome scores by treatment

Variable	SSR (n=612)				NSSR (n=630)			
	Pre		Post		Pre		Post	
	Mean	SD	Mean	SD	Mean	SD	Mean	Sd
Metropolitan Reading								
Vocabulary	31.78	8.20	33.39	8.65	31.47	8.83	33.21	9.77
Comprehension	27.52	8.92	27.95	9.00	27.44	9.42	28.19	8.97
Total	59.33	16.13	61.15	16.90	58.89	17.30	61.31	17.61
Estes Reading Attitude	55.37	9.90	56.37	10.33	56.47	10.36	56.33	10.20
Student Reading Rating								
Well	3.29	.98	3.32	.96	3.28	.98	3.36	.96
Like	3.51	1.13	3.49	1.08	3.45	1.11	3.41	1.08
Much	3.44	1.23	3.35	1.19	3.48	1.26	3.41	1.22

Comprehension was scored on the basis of the number correct out of a possible maximum of 45 items. Total reading is the sum of the Vocabulary and Comprehension scores. The Estes Attitude Scale was scored on the basis of number of total points out of a maximum of 75. The SRRS was scored on the basis of total number of points out of a maximum of five for the Well, Like and Much scales, respectively.

Examination of the data for the total population of children divided into the SSR and NSSR groups reveals very similar scores for the two groups across the reading and attitude measures. It should be emphasized that only MAT raw scores are reported. Analysis of standard scores, grade score equivalents and percentile transformations based on the norm tables for the MAT was outside the objectives for the project. As a matter of interest in describing the population for the study, it should be noted that the percentile equivalents for the raw scores ranged from 56 to 74 for the SSR pretest means, 52 to 62 for the SSR posttest means; 42 to 66 for the NSSR pretest means, 44 to 66 for the NSSR posttest means. The scores approximate a normal distribution, there was little possibility of ceiling effect for the test, and, based on the pretest and posttest means, no statistical regression effect was operating in comparing the SSR and NSSR scores over time. The standard deviations indicate very close variability between the two groups.

The Estes Attitude Scale scores (based on an approximate midpoint of 45) indicate both groups have a generally positive attitude toward reading with only slight differences in mean scores and standard deviations appearing.

The Well, Like and Much scale scores of the SRRS also suggest children in both groups made positive estimates of their reading ability, liking for reading and the quantity of material they read.

Although change score analysis falls outside the objectives for the project, it should be noted that pretest-posttest differences are similar for all measures when comparing the SSR and NSSR groups.

When mean raw scores are organized by grade level (Table 3), the SSR and NSSR groups are similar when compared across the seven outcome measures. However, in comparison with the results in Table 2, greater mean score differences are evident and standard deviations are also more varied in the grade comparisons. The same pattern of positive attitude appears on the Estes Attitude Scale scores. The SRRS scores also follow a similar pattern suggesting children make generally positive estimates of their reading ability, liking for reading and the amount of material read grade by grade.

Strong sex differences appear in the achievement and attitude data when results are organized by gender (Table 4). On comparisons within the SSR and NSSR groups on the seven outcome measures, female mean raw scores are above male raw scores in all instances on both pretest and posttest measures. In almost all instances, as indicated by the standard deviations, males are more variable than females in both achievement and attitude. Males and females differ when compared with each other but males in SSR do not differ markedly from males in NSSR. The same holds true for females. These data support the results presented in Table 1.

Estes Attitude Scale. Pretest scores from the total population of children were used to provide item analysis, internal consistency and sex difference data for the Estes Attitude Scale.

1. Item analysis data. Table 5 presents results for each of the

Table 3. Pre and posttest raw score means and standard deviations for seven outcome scores for grades within treatments

	SSR											
	Grade 5 (n=173)				Grade 6 (n=200)				Grade 7 (n=239)			
	Pre		Post		Pre		Post		Pre		Post	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	Sd
Metropolitan Reading												
Vocabulary	31.94	6.62	32.59	7.67	34.95	8.16	36.12	8.68	29.00	8.30	31.68	8.77
Comprehension	27.08	9.17	26.46	8.58	29.61	9.37	30.90	8.15	26.09	8.03	26.57	9.42
Total	59.10	14.90	58.81	15.33	64.60	16.56	66.98	16.06	55.08	15.39	57.97	17.46
Estes Reading Attitude	55.74	9.33	56.98	9.74	55.41	9.51	56.67	10.52	55.09	10.62	55.68	10.59
Student Reading Rating												
Well	3.31	.95	3.38	.92	3.36	.98	3.38	1.02	3.21	1.00	3.24	.92
Like	3.65	1.09	3.64	1.06	3.52	1.13	3.53	1.09	3.86	1.14	3.57	1.08
Much	3.61	1.12	3.60	1.06	3.49	1.26	3.48	1.24	3.28	1.25	3.31	1.23

Table 3 continued

	NSSR											
	Grade 5 (n=210)				Grade 6 (n=203)				Grade 7 (n=217)			
	Pre		Post		Pre		Post		Pre		Post	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Metropolitan Reading												
Vocabulary	31.21	8.12	32.00	9.81	34.79	8.22	36.09	8.76	28.60	9.03	31.69	10.09
Comprehension	25.99	9.74	27.57	8.71	30.27	9.35	30.31	8.57	26.20	8.59	26.82	9.26
Total	57.16	17.08	59.33	17.04	65.04	16.57	66.38	16.37	54.80	16.64	58.46	18.32
Estes Reading Attitude	56.83	10.56	57.66	9.62	55.91	10.49	55.11	10.43	56.65	10.06	56.19	10.42
Student Reading Rating												
Well	3.35	1.02	3.47	1.04	3.26	1.03	3.29	.90	3.24	.90	3.31	.95
Like	3.59	1.12	3.61	1.17	3.36	1.13	3.31	1.03	3.41	1.07	3.33	.99
Much	3.71	1.24	3.69	1.29	3.40	1.25	3.31	1.17	3.33	1.26	3.25	1.15

Table 4. Pre and posttest raw score means and standard deviations for seven outcome scores for gender within treatment

	SSR								NSSR							
	Male (n=306)				Female (n=306)				Male (n=305)				Female (n=325)			
	Pre		Post		Pre		Post		Pre		Post		Pre		Post	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Metropolitan Reading																
Vocabulary	31.64	8.20	32.98	8.81	31.92	8.20	33.80	8.49	31.07	8.94	32.43	9.95	31.84	8.72	33.94	9.56
Comprehension	27.23	9.65	26.68	9.30	27.81	8.14	29.22	8.54	26.19	10.23	26.77	9.51	28.62	8.44	29.52	8.22
Total	58.86	16.84	59.39	17.52	59.80	15.40	62.92	16.09	57.26	18.25	59.17	18.43	60.42	16.23	63.31	16.59
Estes Reading Attitude	53.60	10.04	54.11	11.10	57.16	9.44	58.63	8.97	53.94	10.90	53.99	10.87	58.84	9.22	58.52	9.01
Student Reading Rating																
Well	3.17	.99	3.26	.98	3.41	.96	3.39	.92	3.16	1.03	3.23	.98	3.40	.92	3.47	.93
Like	3.28	1.07	3.30	1.09	3.74	1.14	3.68	1.04	3.24	1.08	3.20	1.24	3.65	1.09	3.62	1.05
Much	3.21	1.21	3.16	1.18	3.67	1.20	3.73	1.14	3.16	1.24	3.12	1.19	3.78	1.21	3.69	1.18

Table 5. Item analysis for SSR and NSSR pretest Estes Attitude Scale scores

Estes item		SA	A	CD	D	SD	A	CD	D
1. Reading is for learning but not for enjoyment	Grade 5	11.2	17.0	13.8	32.8	25.2	28.2	13.8	58.0+
	Grade 6	7.9	16.3	11.3	35.8	28.7	24.2	11.2	64.5
	Grade 7	7.0	11.8	11.4	38.6	31.3	18.8	11.4	69.9
2. Spending allowance on books is a waste of money	Grade 5	7.1	9.6	14.7	34.4	34.2	16.7	14.7	68.6
	Grade 6	6.2	9.5	13.9	38.2	32.2	15.7	13.9	70.4
	Grade 7	8.0	7.8	14.5	40.8	28.9	15.8	14.5	69.7
3. Reading is a good way to spend time.	Grade 5	46.2	38.2	6.9	4.9	3.8	84.4	6.9	8.7
	Grade 6	39.1	43.9	4.6	8.6	3.8	83.0	4.6	12.5
	Grade 7	36.3	46.2	7.0	7.2	3.4	82.5	7.0	10.6
4. Books are a bore.	Grade 5	4.2	4.5	13.6	31.0	46.7	8.7	13.6	77.7
	Grade 6	4.0	4.0	15.2	34.9	41.9	8.0	15.2	76.8
	Grade 7	4.0	5.4	15.1	34.7	40.8	9.4	15.1	75.5
5. Watching TV is better than reading	Grade 5	13.6	14.1	27.0	21.4	23.9	27.7	27.0	45.3
	Grade 6	15.0	14.1	25.6	25.4	19.9	29.1	25.6	45.3
	Grade 7	12.9	17.7	29.1	24.7	15.5	30.6	29.1	40.2
6. Reading is rewarding to me.	Grade 5	23.2	32.4	29.7	10.3	4.5	55.6	29.7	14.8
	Grade 6	21.0	34.4	27.2	12.8	4.6	55.4	26.3	17.4
	Grade 7	20.5	37.8	26.3	11.0	4.4	58.3	26.3	15.4
7. Books aren't usually good enough to finish.	Grade 5	5.6	16.5	17.0	36.6	24.3	22.1	17.0	60.9
	Grade 6	3.5	15.9	18.8	37.7	24.1	19.4	18.8	61.8
	Grade 7	4.6	12.4	16.1	44.2	22.7	17.0	16.1	66.9
8. Reading becomes boring after about an hour.	Grade 5	14.5	22.3	15.2	26.1	21.9	36.8	15.2	48.0
	Grade 6	9.1	24.3	17.2	28.5	21.0	33.5	17.2	49.5
	Grade 7	8.2	23.5	16.7	29.1	22.5	31.7	16.7	51.6
9. Most books are too long and dull.	Grade 5	7.8	12.7	19.2	32.8	27.5	20.5	19.2	60.3
	Grade 6	6.4	17.7	17.0	37.1	21.9	24.1	17.0	59.0
	Grade 7	6.0	15.7	18.3	39.8	20.1	21.7	18.3	59.9

Table 5 continued

Estes item		SA	A	CD	D	SD	A	CD	D
10. There are many books which I hope to read.	Grade 5	38.6	40.8	10.5	5.6	4.5	79.4	10.5	10.1
	Grade 6	31.3	43.3	13.2	8.4	4.0	74.6	13.2	12.4
	Grade 7	26.7	47.2	12.9	10.2	3.0	73.9	12.9	13.2
11. Books should only be read when they are assigned.	Grade 5	4.0	6.3	10.7	39.5	39.5	10.3	10.7	79.0
	Grade 6	3.8	8.8	6.2	37.5	43.7	12.6	6.2	80.8
	Grade 7	3.4	3.8	5.2	39.2	48.4	7.2	5.2	87.6
12. Reading is something I can do without.	Grade 5	5.1	5.6	12.5	34.2	42.6	10.7	12.5	76.8
	Grade 6	5.3	8.2	8.6	37.7	40.2	13.5	8.6	77.9
	Grade 7	3.6	5.4	10.0	40.0	41.0	9.0	10.0	81.0
13. Some part of summer vacation should be set aside for reading.	Grade 5	17.4	31.5	22.5	15.0	13.6	48.9	22.5	28.6
	Grade 6	18.5	34.0	21.0	14.3	12.1	52.5	21.0	26.4
	Grade 7	12.5	35.5	24.3	17.9	9.8	48.0	24.3	27.7
14. Books make good presents.	Grade 5	29.5	44.6	15.2	7.6	3.1	74.1	15.2	10.7
	Grade 6	25.6	46.6	16.6	8.2	3.1	72.2	16.6	11.3
	Grade 7	17.5	47.4	19.9	10.6	4.6	64.9	19.9	15.2
15. Reading is dull.	Grade 5	5.6	4.0	13.2	32.4	44.9	9.6	13.2	77.3
	Grade 6	6.0	5.7	11.5	33.8	43.0	11.7	11.5	76.8
	Grade 7	4.0	4.8	12.5	38.4	40.2	8.8	12.5	78.6

+reported in percentages

15 items of the Estes organized by grade level. Data are presented for the five Likert levels and for the five levels collapsed into agree, neutral and disagree categories. In general, there is strong agreement with the positive items and strong disagreement with the negative items. This is also reflected in the high overall pretest-posttest mean raw scores reported across treatments, grades and gender in the previous section (Table 2). No marked trends in the positive and negative attitude responses appear in the item analyses across Grade 5, 6 and 7. Although some items show slight negative increases, the data do not generally support the often expressed opinion that positive attitude toward reading declines as children get older. Interesting observations can be made for the separate items in Table 5. For example, children tend to be most neutral on items 5, 6 and 13; they are ambivalent about TV versus reading and the role of reading in summer holiday. The neutral responses on item six most likely reflect the use of the word rewarding in the item. Items 8 and 9 suggest that children may not be too positive about extensive periods of reading and reading longer books. Other observations about individual items and combinations of items are also instructive in presenting a more detailed picture of children's attitudes toward reading in Grade 5, 6 and 7.

2. Internal consistency. Hoyt analysis of variance measures (Nelson, 1974) were used to estimate the internal consistency of the Estes. (It should be noted that the Hoyt estimates are equivalent to Cronbach's alpha.) Internal consistency is roughly equivalent to the average correlation between all pairs of items. High internal consistency is a first step toward good validity for an instrument. Table 6 presents the means, standard deviations, standard errors and internal

Table 6. Estes Attitude Scale means, standard deviations, standard errors, and internal consistency measures by grade and gender using pretest scores

	n	mean	standard deviation	standard error	consistency coefficient
Grade 5	448	56.07	10.37	3.91	.86
Grade 6	453	55.87	10.19	3.62	.87
Grade 7	502	55.96	10.38	3.35	.89
Grade 5 male	227	53.53	10.65	3.91	.86
female	221	58.68	9.41	3.39	.86
Grade 6 male	223	54.21	10.09	3.84	.84
female	230	57.47	10.05	3.38	.88
Grade 7 male	241	53.71	10.61	3.49	.88
female	261	58.03	9.73	3.39	.88

consistency coefficients organized by grade level and gender within grade. The overall internal consistency ratings are quite good for an affective instrument. Subscale and total scale correlations for the items were also in the expected direction. Examination of the plotted histograms revealed an essentially normal distribution with a slight negative skewing of the scores.

3. Sex differences. The overall mean score sex differences noted in Table 4 also appear in Table 6 which presents the data for gender within Grades 5, 6 and 7. These mean score differences, with females consistently superior to males, are highly significant beyond chance as revealed by single factor analyses of variance for Grade 5 ($F(1,381) = 19.12$, $p < .001$); Grade 6 ($F(1,402) = 11.32$, $p < .001$), and Grade 7 ($F(1,454) = 27.89$, $p < .001$). To determine if the sex differences located on any particular items in the scale, a total of 45 single factor analyses of variance were performed comparing sex differences on each item within Grade 5, 6 and 7. Significant differences ($p < .05$) were found for all 15 items for Grade 5; 8 out of 15 items for Grade 6; and 14 out of 15 items for Grade 7. In all comparisons where significant differences were found, females scored more positively than males.
Six additional single factor analyses of variance were performed with the data organized by treatment and grade. All comparisons of sex differences for grades within treatments, with the exception of Grade 6 for the SSR group, were again significant ($p < .05$) suggesting that sex differences on the Estes scores were fairly uniform within grade and across the two treatment groups (Tables 1 and 4).

Student Reading Rating Scale. Pretest scores from the total population of children were used to provide item analysis, internal consistency and sex difference data for the Student Reading Rating Scale.

1. Item analysis data. Table 7 presents results for each of the three items for the SRRS organized by grade. Data are presented using a five point low to high scale and with the five point scale collapsed into a negative, neutral and positive scale. Children's estimates of their global reading ability do tend to become somewhat more negative as they get older. The results of the Like scale scores generally corroborate the highly positive scores previously reported for the Estes (Tables 2 and 5). However, the SRRS indicates more of a decline in positive attitude toward reading across grades with 86.7% of children rating themselves 3 to 5 points at Grade 5; 80.9% at Grade 6; and, 63.6% at Grade 7. In general, the results of the SRRS Much scores indicate a generally high level of reading activity. Again, a decline across grades is in evidence with 86.1% of children rating themselves from 3 to 5 in Grade 5; 78.4% in Grade 6; and, 74.1% in Grade 7.

2. Internal consistency. Hoyt analysis of variance measures were used to estimate the internal consistency of the SRRS. Table 8 presents the means, standard deviations, standard errors and internal consistency coefficients for total scores on the SRRS organized by grade levels and gender within grade. The internal consistency ratings are quite good for an informal affective scale. Subscale and total scale correlations were also in the expected direction.

3. Sex differences. The mean score sex differences noted in Tables 4 and 6 also appear in Table 8 when the SRRS is analyzed by gender within Grades 5, 6 and 7. In all except one comparison (Grade 5 Well) the sex differences on each scale at each grade level were highly significant as revealed by single factor analyses of variance

Table 7. Item analysis for SSR and NSSR pretest Student Reading Rating Scale scores

SSRS item		1	2	3	4	5	-	0	+
1. About how Well do you read?									
	Grade 5	2.1	12.8	52.7	14.1	18.3	14.9	52.7	32.4+
	Grade 6	2.2	16.1	46.7	18.4	16.6	18.3	46.7	35.0
	Grade 7	2.2	17.8	48.2	19.1	12.7	20.0	48.2	31.8
2. How well do you Like to read?									
	Grade 5	2.3	11.0	40.2	15.7	30.8	13.3	40.2	46.5
	Grade 6	4.2	14.6	38.0	19.1	23.8	16.8	38.0	42.9
	Grade 7	3.5	16.9	37.7	20.2	21.7	20.4	21.7	41.9
3. About how Much do you read?									
	Grade 5	4.7	9.1	36.8	13.3	36.0	13.8	36.8	49.3
	Grade 6	7.4	13.9	35.2	13.4	29.8	21.3	35.2	43.2
	Grade 7	8.3	17.5	35.1	13.8	25.2	25.8	35.1	39.0

+reported in percentages

Table 8. Student Reading Rating Scale means, standard deviations, standard errors, and internal consistency measures by grade and gender using pretest scores

		n	mean	standard deviation	standard error	consistency coefficient
Grade 5		383	10.62	2.69	1.09	.76
Grade 6		403	10.17	2.98	.97	.84
Grade 7		456	9.92	2.90	.96	.84
Grade 5	male	190	10.23	2.66	1.12	.73
	female	193	11.01	2.68	1.03	.78
Grade 6	male	198	9.56	3.05	.93	.86
	female	205	10.77	2.79	1.01	.81
Grade 7	male	223	9.12	2.71	.92	.83
	female	233	10.69	2.87	.98	.83

($F(1,381) = .17$, $p < .67$, n.s. for *Well* for Grade 5, $F(1,401) = 10.62$, $p < .001$, for *Well* for Grade 6, $F(1,454) = 14.13$, $p < .001$, for *Well* for Grade 7; $F(1,381) = 11.48$, $p < .001$, for *Like* for Grade 5, $F(1,400) = 11.38$, $p < .008$, for *Like* for Grade 6, $F(1,454) = 29.78$, $p < .001$, for *Like* for Grade 7; $F(1,381) = 9.26$, $p < .002$, for *Much* for Grade 5, $F(1,400) = 19.78$, $p < .001$, for *Much* for Grade 6, $F(1,454) = 36.70$, $p < .001$, for *Much* for Grade 7). Females rated their reading achievement significantly higher than males, indicated a significantly more positive liking for reading, and indicated they read significantly more than males. The observed sex differences tended to increase as grade level increases.

Teacher Reading Rating Scales. Scores from the total population of children were used to provide item analysis, internal consistency and sex difference data for the TRRS which was administered prior to the SSR treatment program (note that data from the TRRS has *not* been included among the dependent variables as only a pretest administration was possible).

1. *Item analysis data*. Table 9 presents results for each of the three items of the TRRS organized by grade level. Data are presented using a five point low to high scale and with the five point scale collapsed into a negative, neutral and positive scale. The results for the TRRS *Well* scores are similar to the estimates made by children reported in Table 7. However, teacher estimates tend to place fewer children in the 3 and above category with an increase in the 1 and 2 categories. Teachers are also prone to designate more 4 than 5 ratings while children designate more 5 than 4 ratings. (It should be noted that the SRRS *Well* scale correlates .45 with MAT Vocabulary and .45

Table 9. Item analysis for SSR and NSSR Teacher Reading Rating Scale scores ++

TRRS items	1	2	3	4	5	-	0	+
1. Teacher estimate of how Well students read.								
Grade 5	6.3	21.9	35.8	26.4	9.7	28.2	35.8	36.1+
Grade 6	5.0	15.7	46.7	27.9	4.4	20.7	46.7	32.3
Grade 7	7.8	20.1	38.1	26.6	7.3	27.9	38.1	33.9
2. Teacher estimate of how much students Like to read.								
Grade 5	9.0	19.3	33.1	26.1	12.5	28.3	33.1	38.6
Grade 6	5.9	19.3	38.6	25.7	10.5	25.2	38.6	36.2
Grade 7	9.4	19.1	34.2	24.3	12.7	28.5	34.2	37.0
3. Teacher estimate of how Much students read.								
Grade 5	10.5	24.2	37.9	20.5	6.8	34.7	37.9	27.3
Grade 6	6.8	20.0	48.4	21.6	3.2	26.8	48.4	24.8
Grade 7	11.6	27.4	35.8	19.5	5.8	39.0	35.8	25.3

++ Based on responses from 63 teachers
+ reported in percentages

with MAT Comprehension; the TRRS *Well* scale correlates .56 with the MAT Vocabulary and .61 with the MAT Comprehension sections. Using the MAT as the criterion for how *Well* one reads, teacher estimates correlate more highly with the criterion and perhaps have more validity than estimates made by children.)

The results for the teacher estimates on the TRRS *Like* scores are similar to those for the *Well* scores with teachers making a more conservative estimate of how much children like to read. Again, teachers made more 4 than 5 ratings with the trend reversed when children made the ratings. (It should be noted that the SRRS *Like* scale correlates .56 with the Estes total score; the TRRS *Like* correlates .39 with the Estes total score. Using the Estes as the criterion estimate of attitude toward reading, children's estimates correlate more highly with the criterion and perhaps have more validity than teacher estimates of liking for reading.)

The results for the teacher estimates on the TRRS *Much* scale are similar to the *Well* and the *Like* scales with teachers making a more conservative estimate of how much children read. However, the teacher estimate is even more conservative for the *Much* scale than the *Well* and the *Like* scales when the means and item analysis data are examined. Children's estimates are skewed toward the 4 and 5 ratings while teacher estimates are skewed more toward the lower ratings. Unfortunately, none of the measures in the study provide a criterion to help in estimating whether teacher or student ratings of how much reading is done are more valid. The above results for the *Well*, *Like* and *Much* scales are substantiated when the total scores for the SRRS (Table 8) and the TRRS (Table 10) are examined. In all grade by gender comparisons, teacher mean scores are below those made by children.

The SRRS and the TRRS intercorrelations are presented below.

SRRS	TRRS
Well with *Like*, r = .52	*Well* with *Like*, r = .74
Well with *Much*, r = .52	*Well* with *Much*, r = .77
Like with *Much*, r = .73	*Like* with *Much*, r = .78

Teachers and children are quite similar in that they draw a strong connection between how much one *Likes* to read and how *Much* reading is actually done. Teachers and children differ in the extent to which they draw a connection between how *Well* one reads and how *Much* one reads; children tending more to separate reading achievement and the amount read. Teachers and children also differ in the extent to which they draw a connection between how *Well* one reads and how much one *Likes* to read; children tending more to separate reading achievement and liking for reading. In summary, both teachers and children view liking for reading and the amount read as being strongly connected. However, teachers tend not to separate reading achievement from the affective aspects of liking for reading and amount read whereas children do. The fact that teachers and children make different estimates of reading achievement, liking for reading and amount read is further substantiated by intercorrelations between the SRRS and the TRRS (SRRS *Well* with TRRS *Well*, r = .47; SRRS *Like* with TRRS *Like*, r = .40; SRRS *Much* with TRRS *Much*, r = .38). Other intercorrelations between the two scales are generally low order (see Figure 4).

2. *Internal consistency*. Hoyt analysis of variance measures were used to estimate the internal consistency of the TRRS. Table 10 presents the means, standard deviations, standard errors, and internal

	Comp	Estes	SRRS Well	SRRS Like	SRRS Much	TRRS Well	TRRS Like	TRRS Much
Vocab	.78	.33	.45	.39	.32	.58	.48	.48
Comp		.37	.45	.40	.33	.61	.54	.53
Estes			.33	.56	.48	.36	.39	.37
SRRS Well				.52	.52	.47	.42	.41
SRRS Like					.73	.39	.40	.40
SRRS Much						.37	.36	.38
TRRS Well							.74	.77
TRRS Like								.78
TRRS Much								

Figure 4. Intercorrelations among reading and attitude measures (n = 1,242)

Table 10. Teacher Reading Rating Scale means, standard deviations, standard errors, and internal consistency measures by grade and gender ++

	n	mean	standard deviation	standard error	consistency coefficient
Grade 5	383	9.27	2.73	.73	.89
Grade 6	403	9.16	3.25	.81	.91
Grade 7	456	9.41	3.09	.73	.92
Grade 5 male	190	8.64	2.78	.71	.90
female	193	9.90	2.52	.75	.87
Grade 6 male	198	8.08	3.31	.80	.91
female	205	10.20	2.84	.82	.87
Grade 7 male	223	8.60	3.26	.72	.93
female	233	10.18	2.71	.72	.89

++ Based on responses from 63 teachers

consistency coefficients for total scores on the TRRS organized by grade level and gender within grade. The internal consistency ratings are quite good for an informal affective instrument. Subscale and total scale correlations were also in the expected direction.

3. Sex difference. The mean score sex differences noted in Tables 4, 6 and 8 also appear in Table 10 when the TRRS are analyzed by gender within Grade 5, 6 and 7. Single factor analyses of variance revealed that the sex difference ratings by teachers were highly significant ($p < .0000$) for all comparisons ($F(1,383) = 17.58$ for Well for Grade 5, $F(1,400) = 40.21$ for Well for Grade 6, $F(1,454) = 13.33$ for Well for Grade 7; $F(1,380) = 14.14$ for Like for Grade 5, $F(1,400) = 36.72$ for Like for Grade 6, $F(1,454) = 26.50$ for Like for Grade 7; $F(1,381) = 23.15$ for Much for Grade 5, $F(1,387) = 48.40$ for Much for Grade 6, $F(1,454) = 49.21$ for Much for Grade 7). Teachers consistently rated females as being significantly higher achievers in reading, as liking reading significantly more, and as reading significantly more than males. The same sex difference pattern occurs on the Estes and the SRRS but the judgment is considerably stronger when made by teachers than when made by a standardized test of reading attitude or an informal assessment made by children themselves.

Reading Preference Inventory. The RPI was developed to provide ranked data on the general categories of reading preferred by intermediate grade children. A full description of the development of the RPI can be obtained in Summers (1978 b). The 90 item paired comparison instrument was completed by 1,392 children in Grades 5, 6 and 7 in the SSR and NSSR schools prior to the beginning of the SSR program.

1. Patterns of reading preference. Table 11 presents the ranked

Table 11. Ranked preferences for 14 categories of reading organized by gender for 1,392 children

RPI category for males (n=710)		RPI category for females (n=682)	
Mystery	56.03	Mystery	57.91
Adventure	49.10	Adventure	54.73
Sports	34.31	Fantasy	22.90
Fantasy	30.54	Animals	21.40
Science	25.39	Romance	20.00
Humour	18.74	Humour	14.66
Travel	7.21	Nature Study	-13.26
Hist/Geog	-2.56	Travel	-15.01
Animals	-4.98	Sports	-15.62
Nature Study	-16.76	Child/Fam	-17.09
Romance	-38.83	Biography	-26.08
Biography	-41.52	Poetry	-36.40
Child/Fam	-55.38	Hist/Geog	-43.35
Poetry	-61.35	Science	-46.36

RPI results for the 14 categories of reading for the 1,392 children categorized by gender. The RPI Index was developed to illustrate the magnitude of the differences between ranks for the 14 categories. The RPI Index is calculated as follows:

$$\text{RPI Index} = \frac{\begin{array}{l}\text{Sum of the number of}\\ \text{times the category is}\\ \text{selected when paired}\\ \text{with each of the 13}\\ \text{other categories}\end{array} \quad \text{minus} \quad \begin{array}{l}\text{Sum of the number of}\\ \text{times the category is}\\ \text{not selected when}\\ \text{paired with each of the}\\ \text{13 other categories}\end{array}}{\begin{array}{l}\text{Sum of total possible}\\ \text{selections across all}\\ \text{categories in the RPI}\end{array}} \times 100$$

For example, with results from a group of 242 children, the total number of times Adventure could have been selected if it were selected first in all paired comparisons = 3,146. Adventure was actually selected first a total of 2,434 times leaving a balance of 712 instances where another category in the pair was selected first. Using the formula, we obtain:

$$\text{RPI Index for Adventure} = \frac{2{,}434 - 712}{3{,}146} \times 100 = \frac{1{,}722}{3{,}146} \times 100 = 54.73.$$

Thus, the RPI Index for Adventure for this group of 242 students is 54.73 indicating the Adventure category was a very popular choice when paired with the other 13 categories. High positive RPI Index scores indicate strong preference, high negative scores indicate the category is seldom preferred, and low negative and positive scores indicate children tend to select the category about equally when paired with the other categories.

The ranked RPI Index scores in Table 11 reveal that children have extremely strong preferences for a few of the 14 categories, somewhat neutral preferences for other categories (i.e., several categories are preferred in about the same proportions when compared to the other categories), and little preference for some categories. Obvious sex differences appear in the RPI Index scores. Mystery and Adventure are top ranked for both males and females with Humor similar in preference but ranked lower in terms of choice. With the exception of these three choices, all other categories are differentially preferred by males and females. It is of interest to note that Sports, Science and Fantasy are strongly preferred by males while Fantasy, Animals and Romance are strongly preferred by females. However, it should be borne in mind that even though strong preference is expressed for some categories by children as a whole, some children will express strong individual preferences for even some of the very weak categories as indicated by the overall data. Also, some males could rank Romance high while some females could rank Sports high.

The wide variation in preference is even more marked when the RPI Index results are organized by gender within grade levels. Tables 12, 13 and 14 reveal that for all grades Mystery and Adventure remain the top preferences for both males and females with considerable variation on the other 12 categories grade by grade. Numerous interesting patterns of preference appear. For example, Romance ranked 6th for females in Grade 5, moves to 5th in Grade 6, and to 3rd in Grade 7--about as one would predict. Animals ranked 4th for females in Grades 5, 6 and 7 but ranked 8th in Grade 5, 9th in Grade 6, and 8th in Grade 7 for males. Sports are ranked 3rd in Grades 5, 6 and 7 for males and ranked 9th in Grade 5, 7th in Grade 6, and 11th in Grade 7 for females. None of the six separate grade and gender ranked listings are similar grade by grade for this large group of children outside the first two categories of Mystery and Adventure. Great variability is the significant

Table 12. Ranked preferences for 14 categories of reading organized by gender for Grade 5

RPI category for males (n=223)		RPI category for females (n=224)	
Mystery	53.43	Mystery	59.89
Adventure	42.25	Adventure	58.77
Sports	31.76	Fantasy	22.55
Fantasy	30.25	Animals	22.41
Science	23.61	Humour	14.13
Humour	16.17	Romance	-.97
Travel	5.96	Nature Study	-6.48
Animals	-3.00	Travel	-9.20
Hist/Geog	-12.78	Sports	-12.42
Nature Study	-13.30	Child/Fam	-24.52
Romance	-44.26	Poetry	-28.53
Biography	-45.63	Biography	-31.95
Poetry	-52.32	Hist/Geog	-32.62
Child/Fam	-53.76	Science	-46.15

Table 13. Ranked preferences for 14 categories of reading organized by gender for Grade 6

RPI category for males (n=217)		RPI category for females (n=234)	
Mystery	58.80	Mystery	59.36
Adventure	49.87	Adventure	54.04
Sports	34.13	Fantasy	27.48
Fantasy	33.49	Animals	22.61
Science	31.56	Romance	20.63
Hist/Geog	29.64	Humour	16.76
Travel	10.66	Sports	-11.30
Humour	10.10	Nature Study	-16.52
Animals	-10.17	Child/Fam	-19.98
Nature Study	-13.13	Travel	-20.44
Romance	-42.19	Biography	-24.19
Biography	-42.92	Poetry	-34.45
Child/Fam	-55.68	Science	-45.44
Poetry	-65.33	Hist/Geog	-48.71

Table 14. Ranked preferences for 14 categories of reading organized by gender for Grade 7

RPI category for males (n=242)		RPI category for females (n=242)	
Mystery	55.94	Mystery	54.60
Adventure	54.73	Adventure	51.49
Sports	36.80	Romance	39.66
Humour	28.86	Animals	19.26
Fantasy	28.16	Fantasy	18.81
Science	21.48	Humour	13.15
Travel	5.27	Child/Fam	-7.12
Animals	-2.16	Travel	-15.38
Hist/Geog	-22.03	Nature Study	-16.66
Nature Study	-23.20	Biography	-22.25
Romance	-30.81	Sports	-22.28
Biography	-36.49	Poetry	-45.89
Child/Fam	-56.96	Science	-47.45
Poetry	-66.11	Hist/Geog	-48.55

characteristic of reading preference in intermediate grades.[9]

2. Stability of the RPI. Kendall's tau was computed to estimate the stability of the RPI over time. Kendall's tau coefficient is based on the number of ranks that are ordered in the same direction on both x and y administrations and provides a measure of the extent of agreement between rankings on x and y. A representative sample of 300 children was selected from the nine schools in the study and given a second administration of the RPI approximately six weeks after the first. A total of 287 profiles was available for analysis from this administration. Kendall's tau was computed for each of the 287 RPI's which, in essence, provided data to compare children's rankings of the 14 categories on the first administration with their rankings made approximately six weeks later. Table 15 presents the results with the taus organized by grade level and gender. The median tau coefficient for all groups is approximately .71 suggesting fairly good stability for the RPI across all groups.

Further indication of the stability of the RPI is evidenced by the high percentages of statistically significant tau coefficients for the 287 children. A total of 54% (152/287) of the coefficients were significant at $p < .001$; 32% (90/287) were significant at $p < .01$; 8% (23/287) were significant at $p < .05$; and, 6% (10/287) were significant at $p < .10$.[10]

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[9] Similar variability in preference was found in replicating the RPI analysis using two different Ontario communities consisting of 499 and 620 children in Grades 5, 6 and 7. The data support the conclusion that reading preference is extremely varied and may be influenced by grade level, gender and community. A separate study is in progress examining the statistical significance of differences in preference across communities, grade and gender.

[10] Similar tau coefficients, and related data on their statistical significance, were obtained for the 499 and 620 children in Grades 5, 6 and 7 in the replication studies with the two Ontario communities.

Table 15. Kendall's tau coefficients organized by grade and gender for a representative sample of 287 Grade 5, 6 and 7 children

tau coefficient	male	female	Grade 5	Grade 6	Grade 7	Total	cum %
.96 - .99							
.91 - .95	1	1	1		1	2	.01
.86 - .90	11	8	7	7	5	19	.07
.81 - .85	13	18	8	11	12	31	.18
.76 - .80	18	13	14	8	9	21	.25
.71 - .75	23	20	11	14	18	43	.40
.66 - .70	25	17	13	16	9	37	.53
.61 - .65	20	21	11	21	9	41	.68
.56 - .60	11	17	14	8	6	28	.77
.51 - .55	8	12	6	5	9	20	.84
.46 - .50	5	5	4	3	3	10	.88
.41 - .45	2	6	1	2	5	8	.91
.36 - .40	4	6	3	2	5	10	.94
.31 - .35		4	2	1	1	4	.95
.26 - .30	1		1			1	.96
.20 - .25	1		1			1	.97
	143	144	97	98	92	287	

Additional statistical analysis could be done to determine how the 14 preference categories relate to each other and explore possible underlying dimensions in reading preference. The inventory can be used to rank reading preferences of individuals or groups with fairly good reliability over short periods of time. With longer periods between administrations, actual changes in preference would undoubtedly influence the rankings.

Relationship among reading and attitude measures. Intercorrelations using pretest scores for the standardized and informal measures of reading achievement and attitude are presented in Figure 4. Analysis of the correlation matrix confirms our predictions in terms of the order of relationship we would expect among standardized and informal measures of reading achievement and attitude and teacher and child judgment of achievement and attitude.

Although commonality of variance is present, we would expect reading achievement and attitude tests to be sampling two related but somewhat different domains of behavior. This expectation is confirmed by the data which indicates MAT Vocabulary correlates at low levels with the Estes ($r = .33$), the Like scale of the SRRS ($r = .33$), and the Like scale of the TRRS ($r = .48$). The coefficients of determination ($r^2 \times 100$) indicate that approximately 10.5%, 10.5% and 25% of the variance in Vocabulary is accounted for by the variance in the Estes, SRRS Like scores, and the TRRS Like scores, respectively. In variance terms, this means that only a small percentage of the factors accounting for Vocabulary can be attributed to factors accounting for the Estes, SRRS and TRRS. Therefore, approximately 89.5%, 89.5% and 75% of the determinants of Vocabulary are independent of the determinants of the

Estes, SRRS *Like*, and TRRS *Like*, respectively. We would not fare well in attempting to predict attitude from Vocabulary scores. (A correlation of approximately .70 is needed before 50% of the underlying variance is held in common between two variables.)

The results are similar for the MAT Comprehension scores which also correlate at low levels with the Estes ($r = .37$), the SRRS *Like* ($r = .40$), and the TRRS *Like* ($r = .54$). The coefficients of determination indicate that approximately 12.4%, 16% and 29% of the variance in Comprehension scores is accounted for by the variance in the Estes, the SRRS *Like*, and the TRRS *Like*, respectively. Approximately 87.5%, 84% and 71% of the determinants of Comprehension are independent of the determinants of the three attitude measures. Although the correlations are still low, we would fare slightly better in predicting attitude from Comprehension scores.

The above findings would also be confirmed when teacher and child judgments of reading and attitude are used. In all instances, relatively small percentages of the variance between *Well* and *Like* for the SRRS and the TRRS would be accounted for suggesting the two scales are sampling behavior from related but different domains.

The coefficient of determination for most of the correlations in Figure 4 would be relatively low thus supporting the notion that achievement and attitude measures are sampling from different domains of behavior and child and teacher judgments of reading achievement and attitude are apt to differ.

Similar analysis using coefficients of determination would suggest that standardized and informal measures of achievement and attitude would also have relatively low common variance.

Tests of the Null Hypotheses

Outcome differences for the SSR and NSSR treatment groups were assessed by univariate analyses of covariance using the Multivariance program package. Posttest MAT Vocabulary and Comprehension scores, Estes Attitude Scale scores, and the Student Reading Rating Well, Like and Much scores were used as the six dependent variables with pretest scores used as covariates in all comparisons. Table 16 presents the results for the treatment and interaction null hypotheses and the covariance adjusted mean scores appear in Table 17.

HYPOTHESIS 1

> There will be no significant differences between the two groups on the six dependent variables.

The test of this hypothesis requires comparing the two treatments (SSR n = 612; NSSR n = 630) with scores aggregated across gender, class, grade and schools for both groups, to determine whether one treatment was more effective than the other (see Figure 2 for respective units in the contrast). No significant F statistics for treatment effects appear for any of the six dependent variables (Table 16). Both the SSR and the NSSR groups scored about the same on standardized and informal measures of reading achievement and attitude. The null hypothesis is not rejected. This implies that there are no real differences beyond chance effects. It is of interest to note that the covariance adjusted mean scores favor the SSR group, although the actual differences are small, on five of the six dependent measures (Table 17).

Table 16. Univariate analysis of covariance results for main effect, treatment by grade interactions, and treatment by gender interaction for six dependent variables

	Treatment effect			Treatment by (6 vs. 7) Grade Interaction			Treatment by (5 vs. 6 & 7) Grade Interaction			Treatment by Gender Interaction		
Variable	Mean Sq.	F	p	Mean Sq.	F	p	Mean Sq.	F	p	Mean Sq.	F	p
Vocabulary	9.48	.40	.52	25.69	1.09	.29	4.66	.19	.65	12.67	.54	.46
Comprehension	39.47	1.82	.17	56.28	2.60	.10	274.26	12.68	.000 +	59.04	2.73	.09
Estes	34.26	.62	.42	103.19	1.88	.16	68.83	1.25	.26	20.45	.37	.54
Well	.36	.74	.38	.55	1.12	.28	.58	1.19	.27	.50	1.02	.31
Like	1.67	2.89	.08	.44	.77	.38	.40	.70	.40	.00	.00	.96
Much	.73	.94	.33	.03	.04	.82	1.51	1.94	.16	.26	.34	.55
	(d.f. 1, 1106)			(d.f. 1, 1106)			(d.f. 1, 1106)			(d.f. 1, 1106)		

Note: F ratios computed assuming a fixed effects model.
+ significant beyond .001

Table 17. Covariance adjusted posttest means for main effect, treatment by grade interactions, and treatment by gender interactions for six dependent variables

	Treatment effect		Treatment by grade interaction						Treatment by gender interaction			
			SSR			NSSR			SSR		NSSR	
Variable	SSR	NSSR	5	6	7	5	6	7	male	female	male	female
Vocabulary	33.28	32.89	32.13	36.24	31.46+	31.71	35.94	31.02+	32.67	33.89	32.14	33.64
Comprehension	27.95	27.70	26.08	31.11	26.67+	26.96	30.08	26.05+	26.62	29.29	26.34	29.06
Estes	56.85	56.54	57.45	57.31	55.78	57.43	55.18	56.59	54.50	59.20	54.15	58.64
Well	3.34	3.35	3.36	3.42	3.24	3.48	3.27	3.29	3.28	3.40	3.22	3.47
Like	3.52	3.42	3.64	3.58	3.36	3.62	3.32	3.33	3.33	3.72	3.21	3.63
Much	3.47	3.41	3.66	3.46	3.28	3.68	3.32	3.25	3.18	3.76	3.13	3.70

+ The shift in linearity among the MAT scores across the three grades is most likely attributable to scaling differences in the Intermediate and Advanced forms of the test

HYPOTHESIS 2

> There will be no significant interactions between Grade 5, 6 and 7 scores by treatment on the six dependent variables.

The test of this hypothesis required comparing the SSR Grade 5 classes (n=9) with the NSSR Grade 5 classes (n=12); the SSR Grade 6 classes (n=8) with the NSSR Grade 6 classes (n=9); and, the SSR Grade 7 classes (n=12) with the NSSR Grade 7 classes (n=10) to determine if one treatment is more effective than the other for any grade level (see Figure 2 for respective units in the contrasts). The F statistics testing the interactions between treatment and grade level indicate no interaction (less the Comprehension scores for 5 vs. 6+7) effect for these two factors (Table 16). The two treatments had no differential effect on grade level, beyond chance, in the analysis of the covariance adjusted posttest mean scores (Table 17). The null hypothesis is not rejected for the treatment by grade interaction. The covariance adjusted means do exhibit a shift in linearity across Grades 5, 6 and 7 for MAT Vocabulary and Comprehension (Table 17). This is most likely attributable to a scaling artifact in the Intermediate and Advanced forms of the MAT and also could account for the significant interaction.

HYPOTHESIS 3

> There will be significant differences in comparing males and females by treatment on the six dependent variables.

The test of this hypothesis requires comparing SSR (n=305) with NSSR (n=306) for males, relative to SSR (n=306) with NSSR (n=325) for females, to determine if one treatment is more effective than the other for males and females (see Figure 2 for respective units in the contrasts). The F statistics testing the relationship between treatment and gender indicate no interaction effect for these two factors (Table 16). The two treatments had no differential effect on gender, beyond chance, in the analysis of the covariance adjusted posttest mean scores (Table 17). The null hypothesis is not rejected for the treatment by gender interaction. Although the covariance adjusted mean score analysis indicated no interaction effect, the superiority of female scores on all six dependent variables is again markedly illustrated in Table 17. As indicated previously in the item analysis data for the pretest measures, great sex differences were found on all measures of achievement and attitude irrespective of whether standardized or informal measures were used or whether teachers or children estimated level of achievement and attitude.

The statistical analyses revealed that none of the null hypotheses posed as part of the research question could be rejected. Data for all six dependent variables indicated there were no significant effects for treatment, and combinations of treatment and grade, and treatment and gender. Thus, our proposed view that SSR would have no significant effect on reading achievement and attitude in comparison with NSSR schools is tenable based on data from both standardized and informal measures of reading achievement and attitude and teacher and child judgment of the two. It should be borne in mind that our results neither prove nor disprove the research hypothesis as to the effect of SSR programs on achievement and attitude; we have just failed to reject the view that there would be no differences within the parameters of the particular population and controlled study conducted with the Richmond schools.

School effects. Did schools within the two treatments differ in the effect they had on reading achievement and attitude? The

Multivariance program provided data which can be used to answer this question (see Figure 2 for respective units in the contrasts). Based on pairwise comparisons among schools within treatments (Table 18), significant F statistics ($p < .05$) revealed differences on four out of twelve dependent variables (with one F approaching significance) among schools for both the SSR and the NSSR treatment groups. Table 19 presents the covariance adjusted mean scores which indicate the nature of the differences for the Well scale for the SSR schools and the MAT Vocabulary, Estes and Like scores for the NSSR schools. Somewhat greater between school differences for reading and attitude scores are apparent for the NSSR schools. The SSR schools may be more homogeneous in program effect than the NSSR schools although the data suggest that both groups have fair homogeneity.

Class effects. The school effect results can be supplemented with an analysis of class effects within the two treatment groups. A total of 150 single factor analyses of variance (72 SSR comparisons and 78 NSSR comparisons) were computed comparing classes within each grade and school on the six dependent variables to determine if there were nonsignificant class effects supporting the selection of pupils as independent units of analysis in the study. For example, classes 1 and 2, in Grade 5, in school 1, within the SSR treatment group (see Figure 2 for the respective units in the comparisons) were compared on the six dependent variables. Tables 20 and 21 present the results for the SSR and NSSR classes. With the level of significance set at .05, 15 comparisons (10%) among classes by grade, school and treatment resulted in significant differences (7 SSR; 8 NSSR). With a relaxed level of significance, an overall TYPE I error set at .20, a total of

Table 18. Univariate analysis of covariance comparing schools within the SSR and NSSR treatments on six dependent variables

Variable	SSR Schools			NSSR Schools		
	Mean Sq.	F	p	Mean Sq.	F	p
Vocabulary	28.91	1.23	.29	61.44	2.62	.03+
Comprehension	46.88	2.16	.09	23.70	1.09	.35
Estes	94.51	1.72	.15	176.07	3.21	.01+
Well	1.46	2.98	.03+	.89	1.83	.11
Like	.43	.74	.52	2.24	3.88	.003+
Much	1.97	2.54	.054#	.46	.60	.66
	(d.f. 3, 1106)			(d.f. 4, 1106)		

# p of .054 approaches significance at .05

Table 19. Covariance adjusted posttest means for SSR and NSSR schools on six dependent variables

	School	Vocab	Comp	Estes	Well	Like	Much
SSR	School 1	33.04	29.01	57.85	3.34	3.55	3.57
	School 2	33.60	27.85	55.26	3.24	3.43	3.42
	School 3	33.80	27.87	57.32	3.51	3.67	3.56
	School 4	32.97	27.52	56.91	3.31	3.49	3.39
NSSR	School 1	30.73	27.07	56.66	3.29	3.42	3.34
	School 2	34.95	29.93	56.03	3.41	3.40	3.46
	School 3	34.05	28.25	54.99	3.25	3.36	3.41
	School 4	34.03	29.01	56.34	3.37	3.34	3.36
	School 5	30.67	24.23	57.98	3.42	3.59	3.51

Note: SSR schools differ significantly on Well means; NSSR schools differ significantly on Vocabulary, Estes and Like means.

Table 20. Summary ANOVA results comparing classes within schools for the SSR treatment on mean scores for six dependent variables

	School 1		School 2		School 3		School 4	
	F	p	F	p	F	p	F	p
				SSR Grade 5				
Voc	.26	.61	.58	.56	.14	.70	.32	.57
Comp	.01	.89	.05	.95	.36	.54	.00	.98
Estes	.68	.41	.75	.47	.08	.77	2.81++	.10
Well	.01	.90	.85	.43	1.14	.29	2.29++	.13
Like	.14	.70	1.64	.20	.23	.62	.18	.67
Much	.40	.53	.12	.88	.07	.79	.07	.78
				SSR Grade 6				
Voc	6.63+	.003	.46	.71	.43	.51	1.11	.29
Comp	5.59++	.06	.05	.98	4.17+	.04	.01	.90
Estes	3.24+	.04	1.03	.38	.02	.87	.00	.97
Well	3.96+	.02	.41	.74	.11	.74	.00	.95
Like	.67	.51	.80	.49	.46	.50	.01	.90
Much	2.23++	.11	.10	.95	.19	.66	1.99++	.16
				SSR Grade 7				
Voc	1.82++	.17	1.07	.36	.42	.52	.13	.87
Comp	2.97++	.06	1.31	.27	.17	.67	1.04	.35
Estes	.49	.61	2.68++	.05	6.67+	.01	.46	.63
Well	3.28+	.04	1.10	.35	5.00+	.03	1.85++	.16
Like	2.51++	.09	1.60++	.19	.88	.35	.24	.78
Much	2.81++	.07	2.12++	.10	2.63++	.11	.95	.39

+significant at .05
++significant at .20

Table 21. Summary ANOVA results comparing classes within schools for the NSSR treatment on mean scores for six dependent variables

	School 1		School 2		School 3		School 4		School 5	
	F	p	F	p	F	p	F	p	F	p
					NSSR Grade 5					
Voc	.92	.40	.27	.60	3.78+	.03	1.35	.26		
Comp	.46	.63	.10	.75	1.03	.36	.55	.57		
Estes	1.49	.23	2.74++	.10	.14	.86	.89	.82		
Well	.40	.66	1.61	.21	1.64	.20	3.93+	.02		
Like	.47	.62	1.27	.26	.77	.46	7.10+	.001		
Much	3.36+	.04	1.02	.31	.40	.66	4.26+	.01		
					NSSR Grade 6					
Voc	.85	.36	.32	.57	.03	.88	.95	.39	2.91++	.09
Comp	3.05++	.08	1.64	.20	.55	.45	1.59	.23	.64	.42
Estes	2.07++	.15	.22	.63	.97	.33	2.32++	.10	2.06++	.16
Well	.53	.47	.35	.55	.54	.46	1.42	.24	2.32++	.13
Like	.00	.96	.69	.40	.09	.75	.57	.56	.20	.65
Much	1.28	.26	.36	.55	.32	.57	.36	.69	3.93++	.05
					NSSR Grade 7					
Voc	.00	.96	4.28+	.04	.06	.80	1.87++	.16		
Comp	.30	.58	4.47+	.03	.88	.35	1.32	.27		
Estes	.46	.49	.22	.63	.14	.70	3.81+	.02		
Well	.03	.85	2.79++	.10	.09	.75	.08	.92		
Like	.23	.63	.56	.45	.19	.65	2.63++	.07		
Much	2.39++	.12	.62	.43	1.81++	.18	.21	.80		

+significant at .05
++significant at .20

Note: School 5 NSSR has one class at Grade 5 and 7

42 comparisons (28%) resulted in significant differences (21 SSR; 21 NSSR). The percentages of significant F's suggests a differential class effect may have been operating in both treatment groups. However, in neither case does the effect focus on any one class, grade or school. It should also be borne in mind that the effect may not be particularly strong in that many of the comparisons are between classes with very small n's thus limiting the variances among comparisons.

In analyzing the above data on school and class effects, we are left with the impression that we did a fair job of balancing the sources of classroom and school influences across the two treatments. School and class effects are proportionally apparent in both treatment groups but not to great degree; particularly if relative size in the class comparisons is taken into consideration as a mitigating factor. However, it is possible that the SSR program may have affected some schools and classes differently. In the analysis of the focused interviews held with teachers, discussed later, we also conclude that teachers may have differed in the extent to which they were able to start-up and maintain SSR programs. This could have had somewhat of an effect class by class. The same may be possible for whatever programs were being laid on in the NSSR schools. If SSR replication studies using the child as the unit of analysis should produce treatment effects, it might be advisable to collect data which allows for independent assessment of class and school effects.

Principal components analysis. The previous analysis of the intercorrelation matrix of the pretest scores (Figure 4) revealed that reading and attitude measures are sampling from two related, but different, domains of behavior. The results of the principal components analysis of the intercorrelation matrix for the six dependent variables, using posttest scores, corroborates the correlation data (Figure 5). Among the six components appearing in the analysis, the first three can be interpreted. The first component (Eigenvalue 1.965) is clearly one consisting of the Estes and the *Well*, *Like* and *Much* scales of the SRRS. This could be labelled an *affective* component The second component (Eigenvalue 1.225) is clearly one consisting of the MAT Vocabulary and Comprehension tests. This could be labelled a *cognitive* component. The third component (Eigenvalue .903) is essentially an affective/ cognitive component but it is not strong. The balance of the components are too weak for interpretation.

Summative Evaluation of SSR

A summative evaluation form was used to obtain reactions from teachers, principals and librarians as to the effect of SSR in their buildings. The results are summarized in Appendix A. A total of 35 principals, teachers and librarians responded. Analysis by school and grade revealed few major differences so the results have been presented for the total SSR group of schools.

The respondents made strong ratings for: (1) all school scheduling of SSR, (2) a period of 20 to 25 minutes scheduled four to five times a week, (3) SSR periods to begin either the morning or afternoon segment of the school day, and (4) room libraries as an adjunct to SSR programs. The reaction to current library facilities in terms of access and quantity of materials was generally positive.

In rating the general reaction of children to SSR, 28 respondents felt children's reactions to be positive, 4 highly positive, and 3 negative or somewhat negative. Teachers, principals and librarians, Principal components--Variables × components (rows × cols)

	1	2	3	4	5	6
1 Vocabulary	-0.037554	0.779083	0.012715	0.623279	0.039466	0.037727
2 Comprehension	-0.056259	0.766903	-0.185703	-0.610399	0.040218	-0.002084
3 Estes	-0.631872	-0.064598	-0.523316	0.067360	-0.541177	0.159048
4 *Well*	-0.505101	0.132115	0.759908	-0.103363	-0.373186	-0.002319
5 *Like*	-0.831544	-0.035893	-0.114511	0.049882	0.201341	-0.501105
6 *Much*	-0.784111	-0.087329	0.066354	-0.026653	0.458204	0.403087

Vector	Eigenvalue	% of variation
1	1.965262	32.75
2	1.225653	20.42
3	0.903484	15.05
4	0.779483	12.99
5	0.685805	11.43
6	0.440315	7.33

Figure 5. Principal components analysis of posttest measures

almost without exception, shifted to the upper end of the 10 point scale when asked to compare their acceptance of SSR at the beginning of the program to their acceptance at the conclusion of SSR activity. Almost all respondents recommended that SSR become a continuing language arts activity in the district and 33 indicated SSR should be continued into the junior secondary grades. Respondents were somewhat ambivalent about the effects of teacher modelling; 20 felt it to be vital, 13 rated it somewhat necessary, and 2 not necessary. In rating the overall benefits of SSR as an educational activity, 11 respondents rated it a top 10 points, 10 rated it 9, 7 rated it 8, and 6 rated it 7, suggesting a very strong positive reaction to the overall value of SSR.

With respect to the value of SSR for children: (1) two-thirds of the respondents rated the effect very beneficial in developing interest in reading for pleasure and one-third somewhat beneficial, (2) almost all respondents rated some increase in the range of topics read as a result of SSR, (3) six respondents indicated a marked effect in development of a liking for books with 28 indicating some effect and 1 indicating no effect, (4) 29 out of 35 respondents indicated SSR influenced development of a positive attitude toward reading as a school subject with 6 indicating no effect, (5) 23 respondents indicated some change in the use of in and out of school library resources, 9 indicated marked change, 3 indicated no noticeable change, and (6) 23 respondents indicated SSR would benefit all readers with the remaining one-third indicating benefit to either high, average or low readers.

Although a familiar problem arises in that the data above are based on self-reports by participants in response to very general questions, the overall results suggest a positive reaction to SSR by teachers, principals and librarians after working with it for five months in the project. The data also support the conclusion that SSR programs can be planned and launched by school staff on a schoolwide basis.

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CHAPTER IV

DISCUSSION AND RECOMMENDATIONS

The null is a difficult hypothesis to reject and this study proved no exception. The most significant conclusion is that we were unable to obtain any evidence which suggests that SSR influenced reading achievement and attitude in any way different than the programs operating in the NSSR comparison schools. This held for both standardized and informal measures of achievement and attitude. There is some evidence to suggest that school and class effects were also operating in both groups. The results are unequivocal; SSR was no better or worse in terms of main effects, or interaction with grade level and interaction with gender, than the NSSR comparison group.

In field research such as this, interpretations of the findings should take into account possible biasing effects and competing explanations which, if valid, may have influenced the results. Eight such effects will be considered here.

1. It could be suggested that the obtained results are inaccurate because the comparison group and the treatment group were poorly matched. For example, if either group were different in initial reading ability, the observed results could have been an artifact of initial group differences rather than the result of treatment differences.

This suggestion does not offer a tenable alternative explanation for the results. Schools were carefully selected for the two groups with equivalency in mind. Pretest data from the analysis of variance contrasts indicated that the groups had approximate initial equivalency on the characteristics examined in the study. Other biasing factors were controlled in the balancing of schools. In addition, the possibility of pretreatment effects was further controlled by the covariance design used in testing the null hypotheses.

2. We could argue that the school and classroom environments in the two groups were quite different and, therefore, one group had an advantage in that it represented environments which were more conducive to development of good reading skills and positive attitude. This argument can be rejected as a possible competing explanation because a reasonable range of variance was present in the school and classroom environments in both groups.

The two groups were formed to insure that each contained an equivalent variety of schools and classrooms. The selection of schools was not left to chance. Groups were judgmentally "balanced" by principals and consultative staff with many years of experience working with the school populations in the district. Previous test data were also available for all schools. Because of the careful selection and number of units involved, neither treatment group was particularly advantaged nor disadvantaged by an overweighting of unusually good or poor schools. Also, as revealed by the analysis of T.Q.S. data, years of experience, and gender, the SSR and NSSR schools had very similar teaching and administrative staffs.

3. Poor implementation of the SSR treatment could have affected the outcome of the study. Any curriculum evaluation project is, ultimately, a test of the school district's ability to conceptualize

the factors involved and conduct a research project. Although institutional constraints might have interfered, aside from the usual difficulties in getting a project started, no undue difficulties were encountered and it can be concluded that the treatment was reasonably well implemented.

The SSR treatment was carefully defined in written form. Orientation and implementation workshops were held to initiate the project and acquaint staff with the purposes and direction of the study. Motivation was good. No staff expressed strong antipathy toward the goals of an SSR program; in fact, most were cooperative and eager to try it out. There was no reason for SSR teachers to either avoid the SSR model or to substitute another model for it. The monitoring (observation, focused interviews) that took place throughout the study indicates there was considerable treatment consistency. There is some possibility of treatment contamination as SSR like efforts may have been taking place in some NSSR classrooms. However, the known efforts were individual classroom projects and no schoolwide implementation of SSR was taking place in any of the comparison schools during the study. The available anecdotal and direct evidence suggests that all schools made a reasonable effort to implement bona fide SSR programs during the five month duration of the treatment.

4. One argument that may have credibility is that the SSR treatment was not of sufficient duration to allow it to have maximum effect. Changes in achievement and attitude are known to be difficult to effect in short term efforts. A five month trial may not have been adequate. However, five months is a substantial treatment period in comparison to other SSR evaluation efforts to date. No sound conceptualization as to

the real effect of SSR has yet been made so it is difficult to predict the length of treatment necessary to provide an adequate test.

Some evidence is available which suggests a longer treatment period would be necessary to obtain a totally adequate test. Figure 3 presents the eight incremental stages of use which defined and guided the Richmond test of SSR. Different schools could be placed at different stages of use at any point during the project. Individual teachers could also be expected to vary in the extent to which they were implementing SSR. The focused interviews and school visits provided data on the characteristics of the start-up and implementation of the project by schools and teachers.

Although some schools and teachers started rapidly, it took many teachers longer than anticipated to incorporate SSR as a regular classroom activity. This could be expected in implementing a program requiring significant changes in teacher role, timetabling, and intra staff activity across the whole school. Curriculum change and evaluation is a complex activity. It should also be borne in mind that the SSR activity intruded in the middle of the year after routines and patterns of operation had already been established in the schools.

Once the decision was made at the district level to assess the effects of SSR, things had to happen quickly in order to plan the project, develop materials and measuring instruments, organize assessment, conduct the training workshops, and have SSR programs operating in classrooms after Christmas. The implementation model used resembled more the fidelity than the mutual adaptation process as described by Fullan and Pomfret. In the focused interviews many teachers stated that, although the workshops were valuable, they needed more time and discussion prior to implementation. This was particularly true for newer teachers, those who had not previously incorporated some time for recreational reading in their schedules, and teachers who had highly scheduled programs which needed considerable adjustment to accommodate SSR. Some teachers stated they were not confident in guiding the recreational and interest reading of children. Others initially rejected this role entirely stating it was largely the province of the school librarian.

Teachers were probably justified in their reaction that more time should have been given to planning and preparation prior to implementation. Emphasis throughout the project was on implementation rather than role change et al. The two workshops were highly structured and, of necessity, packed with information and details related to implementation. One was also scheduled prior to Christmas when there is an unusual amount of end of term activity making demands on time. Discussion of SSR per se was limited although many related print sources were made available. Some teachers were not convinced of the value of SSR until they were well into implementation. It should be recalled that the summative rating data revealed that teachers did change in a positive direction in comparing their commitment to SSR at the beginning of the project with their commitment at the end. The slow initial acceptance could have affected start-up and the level of use eventually achieved. It is estimated that, overall, the implementation of SSR across all schools moved to and slightly beyond the Routine Implementation stage in Figure 3 during the five month trial. It is problematical, but one could speculate that different results might have obtained if schools had had the time to move through all the levels of use as outlined in Figure 3.

5. It could be argued that weak teacher modelling affected the

outcomes of the study and this may relate to the actual level of use achieved as discussed above. The focused interviews revealed that teachers were somewhat reluctant to read during SSR time and model their reading behavior, particularly during the early stages of implementation. It is subjectively estimated that only 65 to 70 percent of the total modelling that could have been done during the project actually took place. Some teachers were strong modellers throughout, others gradually adopted modelling while some few teachers seldom modelled their own reading during the course of the project. Proponents of SSR suggest that adult modelling of reading is a crucial element in its success. In fact, it has been recently suggested that modelling may be "the" crucial element. Thus, socialization of teachers to what may be a new role becomes an important element in implementing SSR.

In modelling reading, teachers were by and large being asked to assume a somewhat different role. This required acceptance of the role and recognition of its importance in the success of SSR. Initial acceptance of modelling might have been better if more time had been given to this aspect during the workshops. Better focus on what to do and how to do it might have helped. While it is impossible to determine the net effect of limited adult modelling in terms of the statistical results for the project, it is highly likely that better modelling could have had an effect on the overall impact of the study.

6. It could be argued that the tests selected as criterion measures did not reflect the goals of the project, or were psychometrically unsound, thus creating a mismatch between objectives and measuring instruments. The objective of the project was to determine the effect of SSR on reading achievement and attitude. Although

different batteries of tests could have been selected, those used are well accepted as measures of achievement and attitude. In addition, more informal measures were also used to provide cross-validation and supplement the standardized tests. No effect for either standardized or informal tests was indicated in testing the null hypotheses. In all instances, the instruments used either have a history of good reliability or such reliability was supported by the data gathered in the study. The argument of an objectives measuring instrument mismatch does not offer a strong competing explanation in interpreting the results.

7. Although the mismatch hypothesis in 6 above is untenable, the possibility of TYPE II error with respect to the measurement of the SSR effect must be entertained. In effect, we may have failed to reject the null hypotheses, based on the tests we used to measure the SSR effect, when in fact we might have rejected them had other instruments been used. We must be sensitive to the possibility that a wider range of outcomes than just achievement and attitude could be measured in assessing the effect of SSR programs. However, at this stage we cannot avoid the fact that little consideration has been given to the development of a conceptual framework for predicting the real effects of SSR programs. As yet, we have only obscure knowledge of the full characteristics of SSR as an independent variable. This makes the selection of criterion measures very difficult. The prevailing view is to assume that the sustained practice involved in SSR may have an effect on reading achievement and attitude. We did not find such an effect for our particular population using standardized and informal measures of achievement and attitude. However, it is possible that effects do exist which were not being measured by the instruments used in the study. We could

hypothesize that several variables influence one another in a causal manner to produce the SSR effect and use path analysis to establish a theoretical prediction with respect to the manner in which cognitive and affective variables interact in developing good readers. Many avenues are open here as the role of affect, in general, has been neglected in models of the reading process.

One very straightforward effect of SSR should be further examined. It is assumed that children will read more given the stimulus of SSR programs and the extra teacher attention and modelling of reading. We did attempt to have children in both the SSR and NSSR groups record the amount and type of reading done over the course of the study using My Reading Bookcase and My Reading Record. However, this activity broke down in practice. Not enough forms were collected to provide a valid comparison of the amounts read in the two groups. Although schools were strongly urged to participate, and some teachers did an admirable job in helping children maintain complete records, the activity was not a popular one. We did not resort to strong pressure because we wished to avoid the obtrusive effect of rigidly insisting on good record keeping, particularly in the SSR schools. The evidence at hand, based on forms completed and reports of teachers and librarians, leads us to believe that more reading was done by SSR children. However, this is pure speculation. It should be recalled that there were no significant differences between SSR and NSSR children at the end of the project when compared on the Much scale of the SRRS.

In attempting to develop a conceptual framework in accounting for the possible effects of SSR, it is highly likely that the majority of benefits attributable to such programs may never be amenable to statistical evaluation. For example, it is often suggested that scheduling SSR periods across the whole school emphasizes that the school considers reading for pleasure as being just as important as reading for academic achievement. Placing emphasis on this aspect of reading is a legitimate school objective and its attainment can have profound consequences. It may well be worth instituting SSR programs just to accomplish this one objective. However, it is almost impossible to quantify such an objective so that it can be measured and judgments as to its attainment have to remain largely subjective. With better conceptualization and operational definition of the purported effects of SSR, we could be more creative in generating useful measuring techniques.

At present, school districts which feel they want to incorporate SSR programs should proceed to do so because of the inherent value of SSR itself rather than because of the expectation that SSR will have strong measured effects on reading achievement and attitude when compared to program X or Y. The catalytic effect which SSR can have on children and teachers, in terms of developing interest and practice of reading, may ultimately be of far greater importance than any precisely measured statistical comparisons.

8. One final alternative explanation which may have affected the results of the study should be considered. Our model is not the only analysis design that could be developed to test effects. Design is both a science and an art and design-analysis mismatch is a possibility in any study. Five problems loom large in curriculum evaluation research: (1) selection of an appropriate unit of analysis, (2) the hierarchical organization of school populations with the need to consider nested factors in analysis, (3) the advisability of using covariance

techniques in quasi-experimental field research, (4) nonrandom formulation of treatment groups, and (5) selection or development of criterion measures. Given the nature of the problem, our design is but one of many that could have been developed. Replication using another design, or reanalysis of our data, might produce interesting and different results. Both activities would be welcomed.

In considering the eight alternative explanations discussed above, the following conclusions can be offered: (1) NSSR schools as a whole were sufficiently equivalent to SSR schools to warrant their serving as a viable comparison group, (2) both treatments contained a similar array of classroom and school environments and teachers and principals were comparable in qualifications and experience, (3) the treatment was reasonably well implemented in SSR schools, (4) measuring instruments were appropriate to the objectives of the study and use of informal and standardized instruments and teacher and child judgment provided good cross validation of the results, and (5) the design and statistical analysis were reasonable in light of the objectives of the study. In contrast, (1) more study and discussion should have been provided prior to implementation, (2) adult modelling of reading could have been stronger throughout the study, (3) a more extensive treatment period might have been advisable, (4) role change and socialization processes should have received greater emphasis, and (5) criterion measures other than those used may have produced different outcomes.

In summary, examination of the pros and cons of the design, implementation and statistical analysis of the study suggests that, although some aspects of the competing explanations have merit, a reasonably reliable and unambiguous test of the null hypotheses was obtained.

Recommendations

As with most educational evaluations, more questions are often raised than answered. A few general recommendations and observations are offered here. It should be borne in mind that our results are correlational rather than causal.

1. The data indicate that in the Richmond intermediate grades reading achievement is slightly above the MAT norm group levels and a generally positive attitude toward reading is present. There is some slight decline in attitude as grade level increases, indicated by the informal measures, but the rather marked decline reported in other studies was not present.

Instituting SSR programs had no negative effects on achievement and attitude. In point of fact, it was somewhat surprising that the level of reading achievement and attitude in the SSR schools was comparable to the NSSR schools at the end of the study considering the SSR schools totally disrupted their activities with a new program whereas the comparison schools continued their established programs without undue interruption. In any event, SSR programs are legitimate curriculum alternatives for developing interest in reading and providing for practice of reading and schools can schedule them without fear of doing undue damage to reading achievement and attitude toward reading.

2. Teachers, principals and children are generally positive to SSR. Although the statistical results show no measurable effects, the summative questionnaire completed by participants indicated strong positive evaluation of SSR by school staff. The project does provide a model for implementing SSR programs. Data from the summative ratings, and the measuring instruments and curriculum materials developed for the

project, can be used by school staff in implementing SSR activities. In developing schoolwide SSR programs, it may be more effective to plan the program in the spring and begin regularly scheduled activity at the start of the school year in September. In addition, the socialization aspects of curriculum change with respect to teacher role should be more carefully considered.

3. Useful information can be gained from both standardized and informal measures of reading achievement and attitude and they should be used in tandem. It should be borne in mind that achievement and attitude are related but somewhat different domains of behavior and less than accurate predictions can be made of one from the other given the low percentages of common variance between the two. It would be inaccurate to assume that a child with average reading ability may not read much or may dislike reading. Likewise, a good reader may not necessarily be an avid reader or have a strong liking for reading. In general, reading achievement, liking for reading and amount read are related but the correlation data suggest we use caution in assuming the relationship is strong or weak for any one individual.

4. It is also useful to obtain estimates of achievement and attitude from children to supplement teacher estimates and provide for cross validation. Teachers tend to be more accurate in their estimates of achievement but tend not to separate achievement from the affective aspects of reading. Children may be less accurate in their estimates of achievement but may make more valid estimates in terms of liking for reading and its affective dimensions. The SRRS can provide a useful, reliable, easy to interpret and quick estimate of reading achievement, liking for reading and amount read to supplement standardized test and

teacher judgment data.

5. The RPI Index provides a useful metric for ranking patterns of reading preference for groups of children. Intermediate grade children tend to focus on a few reading preference categories, but the prevailing pattern is one of marked variability by grade, and particularly, by gender. Preference patterns tend to also change from grade to grade for both males and females. The statistical results support the conclusion that reading preferences can be reliably measured, for individuals and groups, using the RPI.

6. It was not surprising to find that females are better readers than males and that their attitudes toward reading are generally more positive than males. The consistency of this finding, and the fact that it was evident using standardized and informal measures irrespective of whether children or teachers made the assessment, should give us cause for reflection as we plan programs to improve reading achievement and attitude toward reading in intermediate grades. Perhaps SSR should focus far more toward meeting the pronounced reading needs of males and encouraging their entry into print as much as possible during these years.

7. The SSR study has provided for a trial test of a particular model (perhaps best termed "eclectic") of curriculum evaluation as defined by the instigators of the project. Other models, as discussed by Fullan and Pomfret, should also be examined for their potential as paradigms in organizing future curriculum change and evaluation projects within the district. In terms of implementation, programs like SSR may be more amenable to the mutual adaptation model than the fidelity approach. The Hall and Loucks model provided a useful technique for

defining incremental stages in curriculum adoption. In addition, observation, questionnaires, and focused interviews proved to be good devices for monitoring the treatment and gathering data on the extent of implementation achieved. The Hall and Loucks focused interview technique appears to have considerable merit. In relatively short interviews (15 to 20 minutes) using a set of preset questions, we were able to gather much valuable data from teachers, principals and librarians. However, cross-validation by different interviewers should be considered in future studies. Direct observation in classroom settings is also a valuable adjunct to focused interviews and other techniques and we would recommend that more observation in the implementation stage be done in future evaluation studies.

8. Three types of additional research should be conducted using the data gathered in the study. The Comprehension section of the MAT should be item analyzed to determine the relative performance of the intermediate children on the levels of comprehension inherent in the test. The data gathered on the My Reading Bookcase and My Reading Record forms should be analyzed to determine the patterns of book selection, recommendation and preferred reading among intermediate children. The analysis could also provide additional insight into sex differences in reading interest. Finally, the Estes Attitude Scale data collected as part of the pretesting could be analyzed further to see the pattern of attitude in relation to other school areas, and the prevailing sex differences in attitude toward school in general, among intermediate children.

> . . . educational research is likely to be fallible, flawed, and open to criticism of one kind or another. So far as I know, the invulnerable piece of research in any field of the behavioral sciences is nonexistent. Seldom does a research worker anticipate all possible criticisms. And the problems of doing research in the schools may in any case undo his sophistication. (Gage [1978], p. 233)

APPENDIX A

* Estes Attitude Scale

Student Reading Rating Scale

Teacher Reading Rating Scale

Reading Preference Inventory

Summative Rating Scale

My Reading Record

My Reading Bookcase

* Estes Attitude Scales removed due to copyright restrictions. 1975, Thomas H. Estes, University of Virginia, Charlottesville, Virginia.

STUDENT READING RATING SCALE

NAME ________________________ DATE ________

SCHOOL ________________________ GRADE ____

TEACHER ________________________ BOY ___ GIRL ___

Dr. Edward G. Summers
Faculty of Education
University of British Columbia

Please rate yourself on each of the following by marking an X in one box for each question.

1. About how well do you read ?

I am a poor reader	My reading is not as good as most children my age	My reading is about the same as most children my age	My reading is better than most children my age	I feel I am a very good reader

2. How well do you like to read ?

I do not like to read at all	I like to read less than most children my age	I like to read about the same as most children my age	I like to read more than most children my age	Reading is one of my favorite activities

3. About how much do you read ?

I read very little	I read less than most children my age	I read about the same amount as most children my age	I read more than most children my age	I read as often as I can

NAME: ____________________

SCHOOL: ____________________

DATE: ____________________

TEACHER READING RATING SCALES

The following scales have been developed to enable you to rate your students on how much they read, how well they read, and how well they like to read. First list your students on each of the three class sheets. Then consider each student and his reading individually and check your estimate under the appropriate statement.

Dr. Edward G. Summers
Faculty of Education
University of B. C.

SCALE I

TEACHER ESTIMATE OF HOW MUCH STUDENTS READ

	IF I WERE TO RATE A STUDENT ON HOW MUCH HE READS, I WOULD SAY HE READS:				
STUDENTS (alphabetically)	a good deal less than students his own age	somewhat less than students his own age	about average for students his own age	somewhat more than students his own age	a good deal more than student his own age

SCALE II

TEACHER ESTIMATE OF HOW WELL STUDENTS READ

IF I WERE TO RATE A STUDENT ON HOW WELL HE READS, I WOULD SAY HE READS:

STUDENTS (alphabetically)	poorly when compared to students his own age	below average when compared to students his own age	about average when compared to students his own age	above average when compared to students his own age	excellently when compared to students his own age

SCALE III

TEACHER ESTIMATE OF HOW MUCH STUDENTS LIKE TO READ

IF I WERE TO RATE A STUDENT ON HOW MUCH HE LIKES TO READ, I WOULD SAY HE:

STUDENTS (alphabetically)	cares little for reading in comparison to students his own age	is below average in his liking for reading in comparison to students his own age	is about average in his liking for reading in comparison to students his own age	is above average in his liking for reading in comparison to students his own age	exhibits exceptionally strong liking for reading in comparison to students his own age

NAME ______________________________

GRADE ______________ BOY ______ GIRL ______

SCHOOL ______________ DATE ______________

TEACHER ______________________________

CITY ______________________________

READING PREFERENCE INVENTORY

This booklet contains 90 statements about types of books boys and girls like to read. Read each statement carefully. Decide which of the two types of books you would rather read. Place an X in front of the one you choose. Choose only ONE type of book for each statement.

SAMPLE COMPLETED STATEMENT:

I like most to read about:
_____ MYSTERY (ghosts, secrets, detectives, suspense) _____ POETRY (rhymes)

ASK YOUR TEACHER IF YOU DO NOT UNDERSTAND THESE DIRECTIONS

Dr. Edward G. Summers
Faculty of Education
University of B. C.

1. I like most to read about:
_____ HUMOUR (jokes, riddles, funny stories) _____ CHILDREN/FAMILY (home and school life)

2. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairy tales) _____ SPORTS (games, hobbies, recreational activities)

3. I like most to read about:
_____ ADVENTURE (excitement, danger, thrills, action) _____ CHILDREN/FAMILY (home and school life)

4. I like most to read about:
_____ SCIENCE (machines, science fiction, space, plants) _____ BIOGRAPHY (account of a person's life)

5. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ TRAVEL (trips, voyages, exploration)

6. I like most to read about:
_____ ANIMALS (animal stories) _____ HUMOUR (jokes, riddles, funny stories)

7. I like most to read about:
_____ ROMANCE (boy-girl stories, love, novels) _____ BIOGRAPHY (account of a person's life)

8. I like most to read about:
_____ SCIENCE (machines, science fiction, space, plants) _____ POETRY (rhymes)

9. I like most to read about:
_____ BIOGRAPHY (account of a person's life) _____ CHILDREN/FAMILY (home and school life)

10. I like most to read about:
_____ SCIENCE (machines, science fiction, space, plants) _____ ADVENTURE (excitement, danger, thrills, action)

11. I like most to read about:
_____ ANIMALS (animal stories) _____ CHILDREN/FAMILY (home and school life)

12. I like most to read about:
_____ POETRY (rhymes) _____ CHILDREN/FAMILY (home and school life)

13. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairy tales) _____ ANIMALS (animal stories)

14. I like most to read about:
_____ HUMOUR (jokes, riddles, funny stories) _____ HISTORY/GEOGRAPHY (past events, other countries)

15. I like most to read about:
_____ POETRY (rhymes) _____ TRAVEL (trips, voyages, exploration)

16. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ HUMOUR (jokes, riddles, funny stories)

17. I like most to read about:
_____ BIOGRAPHY (account of a person's life) _____ HUMOUR (jokes, riddles, funny stories)

18. I like most to read about:
_____ ANIMALS (animal stories) _____ ROMANCE (boy-girl stories, love, novels)

19. I like most to read about:
_____ BIOGRAPHY (account of a person's life) _____ NATURE STUDY (outdoors, plants, animals, rocks, fish)

20. I like most to read about:
_____ POETRY (rhymes) _____ FANTASY (monsters, myths, make-believe, fairy tales)

21. I like most to read about:
_____ ANIMALS (animal stories) _____ POETRY (rhymes)

22. I like most to read about:
_____ SCIENCE (machines, science fiction, space, plants) _____ ROMANCE (boy-girl stories, love, novels)

23. I like most to read about:
_____ MYSTERY (ghosts, secrets, detectives, suspense) _____ HUMOUR (jokes, riddles, funny stories)

24. I like most to read about:
_____ CHILDREN/FAMILY (home and school life) _____ SPORTS (games, hobbies, recreational activities)

25. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ TRAVEL (trips, voyages, exploration)

26. I like most to read about:
_____ HISTORY/GEOGRAPHY (past events, other countries) _____ SPORTS (games, hobbies, recreational activities)

27. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairy tales) _____ ROMANCE (boy-girl stories, love, novels)

28. I like most to read about:
_____ HUMOUR (jokes, riddles, funny stories) _____ FANTASY (monsters, myths, make-believe, fairy tales)

29. I like most to read about:
_____ TRAVEL (trips, voyages, exploration) _____ ADVENTURE (excitement, danger, thrills, action)

30. I like most to read about:
_____ CHILDREN/FAMILY (home and school life) _____ ROMANCE (boy-girl stories, love, novels)

31. I like most to read about:
_____ CHILDREN/FAMILY (home and school life) _____ SCIENCE (machines, science fiction, space, plants)

32. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ ROMANCE (boy-girl stories, love, novels)

33. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairy tales) _____ BIOGRAPHY (account of a person's life)

34. I like most to read about:
_____ ANIMALS (animal stories) _____ ADVENTURE (excitement, danger, thrills, action)

35. I like most to read about:
_____ SCIENCE (machines, science fiction, space plants) _____ SPORTS (games, hobbies, recreational activities)

36. I like most to read about:
_____ BIOGRAPHY (account of a person's life) _____ POETRY (rhymes)

37. I like most to read about:
_____ ANIMALS (animal stories) _____ MYSTERY (ghosts, secrets, detectives, suspense)

38. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ ANIMALS (animal stories)

39. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairy tales) _____ SCIENCE (machines, science fiction, space, plants)

40. I like most to read about:
_____ MYSTERY (ghosts, secrets, detectives, puzzles) _____ POETRY (rhymes)

41. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ BIOGRAPHY (account of a person's life)

42. I like most to read about:
_____ POETRY (rhymes) _____ HUMOUR (jokes, riddles, funny stories)

43. I like most to read about:
_____ ADVENTURE (excitement, danger, thrills, action) _____ POETRY (rhymes)

44. I like most to read about:
_____ CHILDREN/FAMILY (home and school life) _____ FANTASY (monsters, myths, make-believe, fairy tales)

45. I like most to read about:
_____ SCIENCE (machines, science fiction, space, plants) _____ MYSTERY (ghosts, secrets, detectives, suspense)

46. I like most to read about:
_____ ADVENTURE (excitement, danger, thrills, action) _____ HUMOUR (jokes, riddles, funny stories)

47. I like most to read about:
_____ TRAVEL (trips, voyages, exploration) _____ ROMANCE (boy-girl stories, love, novels)

48. I like most to read about:
_____ SCIENCE (machines, science fiction, space, plants) _____ ANIMALS (animal stories)

49. I like most to read about:
_____ CHILDREN/FAMILY (home and school life) _____ TRAVEL (trips, voyages, exploration)

50. I like most to read about:
_____ ADVENTURE (excitement, danger, thrills, action) _____ MYSTERY (ghosts, secrets, detectives, suspense)

51. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ FANTASY (monsters, myths, make-believe, fairy tales

52. I like most to read about:
_____ BIOGRAPHY (account of a person's life) _____ HISTORY/GEOGRAPHY (past events, other countries)

53. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ POETRY (rhymes)

54. I like most to read about:
_____ ANIMALS (animal stories) _____ BIOGRAPHY (account of a person's life)

55. I like most to read about:
_____ CHILDREN/FAMILY (home and school life) _____ HISTORY/GEOGRAPHY (past events, other countries)

56. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairly tales _____ ADVENTURE (excitement, danger, thrills, action)

57. I like most to read about:
_____ ROMANCE (boy-girl stories, love, novels) _____ HUMOUR (jokes, riddles, funny stories)

58. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairy tales) _____ HISTORY/GEOGRAPHY (past events, other countries)

59. I like most to read about:
_____ HUMOUR (jokes, riddles, funny stories) _____ TRAVEL (trips, voyages, exploration)

60. I like most to read about:
_____ ADVENTURE (excitement, danger, thrills, action) _____ ROMANCE (boy-girl stories, love, novels)

61. I like most to read about:
_____ MYSTERY (ghosts, secrets, detectives, suspense) _____ BIOGRAPHY (account of a person's life)

62. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ SPORTS (games, hobbies, recreational activities)

63. I like most to read about:
_____ HUMOUR (jokes, riddles, funny stories) _____ SCIENCE (machines, science fiction, space, plants)

64. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ MYSTERY (ghosts, secrets, detectives, suspense)

65. I like most to read about:
_____ TRAVEL (trips, voyages, explorations) _____ ANIMALS (animal stories)

66. I like most to read about:
_____ MYSTERY (ghosts, secrets, detectives, suspense) _____ ROMANCE (boy-girl stories, love, novels)

67. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ ANIMALS (animal stories)

68. I like most to read about:
_____ ROMANCE (boy-girl stories, love, novels) _____ HISTORY/GEOGRAPHY (past events, other countries)

69. I like most to read about:
_____ SPORTS (games, hobbies, recreational activities) _____ ADVENTURE (excitement, danger, thrills, action)

70. I like most to read about:
_____ BIOGRAPHY (account of a person's life) _____ TRAVEL (trips, voyages, exploration)

71. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ SCIENCE (machines, science fiction, space, plants)

72. I like most to read about:
_____ ROMANCE (boy-girl stories, love, novels) _____ CHILDREN/FAMILY (home and school life)

73. I like most to read about:
_____ MYSTERY (ghosts, secrets, detectives, suspense) _____ HISTORY/GEOGRAPHY (past events, other countries)

74. I like most to read about:
_____ ADVENTURE (excitement, danger, thrills, action) _____ HISTORY/GEOGRAPHY (past events, other countries)

75. I like most to read about:
_____ MYSTERY (ghosts, secrets, detectives, suspense) _____ CHILDREN/FAMILY (home and school life)

76. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ MYSTERY (ghosts, secrets, detectives, suspense)

77. I like most to read about:
_____ ADVENTURE (excitement, danger, thrills, action) _____ BIOGRAPHY (account of a person's life)

78. I like most to read about:
_____ HUMOUR (jokes, riddles, funny stories) _____ NATURE STUDY (outdoors, plants, animals, fish)

79. I like most to read about:
_____ FANTASY (monsters, myths, make-believe, fairy tales) _____ MYSTERY (ghosts, secrets, detectives, suspense)

80. I like most to read about:
_____ HISTORY/GEOGRAPHY (past events, other countries) _____ ANIMALS (animal stories)

81. I like most to read about:
_____ ROMANCE (boy-girl stories, love, novels) _____ NATURE STUDY (outdoors, plants, animals, rocks, fish)

82. I like most to read about:
_____ HISTORY/GEOGRAPHY (past events, other countries) _____ TRAVEL (trips, voyages, exploration)

83. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ ADVENTURE (excitement, danger, thrills, action)

84. I like most to read about:
_____ TRAVEL (trips, voyages, exploration) _____ SCIENCE (machines, science fiction, space, plans)

85. I like most to read about:
_____ POETRY (rhymes) _____ NATURE STUDY (outdoors, plants, animals, rocks, fish)

86. I like most to read about:
_____ TRAVEL (trips, voyages, exploration) _____ MYSTERY (ghosts, secrets, detectives, suspense)

87. I like most to read about:
_____ POETRY (rhymes) _____ HISTORY/GEOGRAPHY (past events, other countries)

88. I like most to read about:
_____ TRAVEL (trips, voyages, exploration) _____ FANTASY (monsters, myths, make-believe, fairy tales)

89. I like most to read about:
_____ NATURE STUDY (outdoors, plants, animals, rocks, fish) _____ HISTORY/GEOGRAPHY (past events, other countries)

90. I like most to read about:
_____ ROMANCE (boy-girl stories, love, novels) _____ POETRY (rhymes)

GRADE: ________

TEACHER SURVEY REGARDING THE SSR PROJECT

Several sources of information will provide data in the evaluation of the Richmond SSR project. In order that we may have as complete a picture as possible, we are asking the teachers who have been directly involved to provide their own estimates of the value of the project. Please be frank in your responses and comments.

We have requested that you provide your grade level on this page of the questionnaire. Although our survey will not identify teachers and schools, we would like to be able to analyze responses by grade groupings. This is the only identifying information requested.

As we near completion of the SSR project, much has been accomplished and, as in any project, it has also not been possible to follow through as completely as we would have liked in some areas. In any event, little could have been accomplished without the solid cooperation of the administration and faculty in the participating schools. Thanks for all your effort. It has been a pleasure working with you.

Dr. E. G. Summers,
UBC Faculty of Education

Part I - ORGANIZATION:

1. For maximum effect SSR should be scheduled at a specified time for all classes throughout the school:

not necessary	desirable	highly desirable
1	9	25

2. Once SSR has been introduced, a period of 20-25 minutes scheduled 4 to 5 times per week is:

too little	about right	too much
1	34	

3. In my estimation, SSR would best be scheduled:

first thing a.m.	mid a.m.	late a.m.	first thing p.m.	mid p.m.	late afternoon
13	1		22		1

4. How would you describe the effect of the teacher modelling reading during the SSR period:

not necessary for the success of SSR	somewhat necessary for the success of SSR	vital to the success of SSR
2	13	20

5. The availability and range of library books in our school is:

poor	could be better	about right	excellent
1	7	13	14

6. In support of SSR programs, room libraries are:

not needed	needed	necessary	absolutely necessary
4	8	13	10

NOTE: Results from the evaluation of the project will be forthcoming from the district office.

7. Student access to our school library is:

too limited	barely adequate	about right	excellent
2	3	19	11

8. SSR should be extended into junior secondary grades:

yes	no
33	2

ADDITIONAL COMMENTS:

Part II - EFFECT OF SSR ON STUDENTS:

How would you describe the effect of SSR on:

1. Development of interest in reading books for pleasure:

no noticeable effect	somewhat beneficial	very beneficial
	13	22

2. Development of positive attitude toward reading as a school subject:

no noticeable effect	negative effect	positive effect
6		29

3. Increases in student use of school, home and community library sources:

no noticeable change	some change	marked change
3	23	9

4. Increases in the range of topics read by individual student:

no noticeable increase	some increase	considerable increase
5	28	2

5. Development of Liking for books and the joy of reading:

no noticeable effect	some effect	marked effect
1	28	6

---

6. What groups of readers appear to benefit most from the SSR program:

low readers	average readers	high readers	all readers regardless of ability
2	9	4	24

7. What has been the general reaction of your students to the SSR program:

ambivalent	very negative	somewhat negative	positive	highly positive
1		2	28	4

ADDITIONAL COMMENTS:

Part III - TEACHER RESPONSE:

1. Rate the extent to which you were committed to the benefits of SSR as a school activity prior to the beginning of the project:

1	2	3	4	5	6	7	8	9	10
		1	2	5	3	4	7	4	9

2. Rate the extent to which you are now committed to the benefits of SSR as a school activity:

1	2	3	4	5	6	7	8	9	10
							7	12	16

3. In your judgement, should SSR become a recommended language arts activity in all elementary classrooms in the district:

yes	no
34	1

4. If SSR is continued as part of your school program, are there any additional resources needed to insure the success of the program:

List:

5. As a result of the SSR project, are there any areas of reading/language arts you feel should be included as possible in-service topics for the coming year:

List:

6. In terms of return on the investment of time and effort, how would you rate the overall benefits of SSR as an educational activity in your school:

1	2	3	4	5	6	7	8	9	10
				1		6	7	10	11

PLEASE USE THE REVERSE SIDE TO RECORD ANY ADDITIONAL COMMENTS YOU FEEL WOULD BE OF USE IN EVALUATING THE SSR PROJECT.

NAME: ________________________

SCHOOL: ____________ DATE: ______

TEACHER: ____________ GRADE: ____

MY READING RECORD

Attached is a set of forms you can use to help you keep track of the books you read. The forms also provide a place for filling in important information about the books. This information will tell your teacher, the principal, and the school librarian the kinds of books boys and girls are reading in your school. This helps them plan a better school program for you.

FOR EACH BOOK YOU READ:

(a) Fill in the date you start the book.
(b) Write down the title and author.
(c) Check where you got the book
(d) Check the person who suggested you read the book. (notice this could be yourself)
(e) Check whether the book is paperback or hardcover.
(f) Fill in the date if you finish the book. Also include any books in "My Reading Record" that you start but do not finish.

YOUR TEACHER WILL HELP YOU FILL OUT "MY READING RECORD" AND KEEP TRACK OF YOUR BOOKS FOR THE REST OF THE SCHOOL YEAR.

Dr. Edward G. Summers
Faculty of Education - UBC

BOOK					**Source of Book**					**Book Suggested by**							
TITLE	**AUTHOR**	date started	paperback	hardcover	school library	classroom library	public library	purchased	home	father/mother	sister/brother	relative	self	friend	librarian	teacher	date completed
1.																	
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	
11.																	
12.																	
13.																	
14.																	
15.																	

	BOOK																	
	TITLE	**AUTHOR**	date started	paperback	hardcover	school library	classroom library	public library	purchased	home	father/mother	sister/brother	relative	self	friend	librarian	teacher	date completed
16.																		
17.																		
18.																		
19.																		
20.																		
21.																		
22.																		
23.																		
24.																		
25.																		
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27.																		
28.																		
29.																		
30.																		
31.																		
32.																		
33.																		
34.																		
35.																		
36.																		

NAME: ______________________________

SCHOOL: ____________________ DATE: __________

TEACHER: ______________________________

GRADE: __________

MY READING BOOKCASE

MY READING BOOKCASE is a set of forms you can use to help you keep track of the books you read. The forms also provide important information so that your teacher and the school librarian and principal will know the kinds of books boys and girls are reading in your school. This helps them plan a better school program for you.

FOR EACH BOOK YOU READ:

(a) Write down the title and author.
(b) Fill in the date you started the book.
(c) Check where you got the book.
(d) Check the person who suggested you read the book (notice this could be yourself).
(e) Check whether the book is paperback or hardcover.
(f) Write the number of the line on which you wrote the title and author in a square above one of the 14 types of books listed at the bottom of MY READING BOOKCASE (last page). You can also colour in the squares as you read.

WATCH YOUR BOOKCASE FILL UP !!

More information about the types of books listed is given on the next page.

Dr. Edward G. Summers,
Faculty of Education,
University of B. C.

RECORD FOR MY READING BOOKCASE

BOOK					Source of Book					Book Suggested by							
TITLE	AUTHOR	date started	paperback	hardcover	school library	classroom library	public library	purchased	home	father/mother	sister/brother	relative	self	friend	librarian	teacher	date completed
1.																	
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	
11.																	
12.																	
13.																	
14.																	
15.																	

	BOOK		date started	paperback	hardcover	school library	classroom library	public library	purchased	home	father/mother	sister/brother	relative	self	friend	librarian	teacher	date completed
	TITLE	AUTHOR																
16.																		
17.																		
18.																		
19.																		
20.																		
21.																		
22.																		
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30.																		
31.																		
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33.																		
34.																		
35.																		
36.																		

MY READING BOOKCASE

ADVENTURE	HISTORY/GEOGRAPHY	ANIMALS	CHILDREN/FAMILY	SPORTS	HUMOUR	SCIENCE	POETRY	FANTASY	BIOGRAPHY	TRAVEL	ROMANCE	NATURE STUDY	MYSTERY	

TYPES OF BOOKS IN MY READING BOOKCASE

ADVENTURE - (excitement, danger, thrills, action)

HISTORY/GEOGRAPHY - (past events, other countries)

ANIMALS - (stories about animals)

CHILDREN/FAMILY - (home and school life)

SPORTS - (games, hobbies, recreational activities)

HUMOUR - (jokes, riddles, funny stories)

SCIENCE - (machines, science fiction, space, plants)

POETRY - (rhymes)

FANTASY - (monsters, myths, make-believe, fairy tales)

BIOGRAPHY - (account of a person's life)

TRAVEL - (trips, voyages, exploration)

ROMANCE - (boy-girl stories, love, novels)

NATURE STUDY - (outdoors, plants, animals, rocks, fish)

MYSTERY - (ghosts, secrets, detectives)

APPENDIX B

Richmond School District SSR Project Activities Log

Implementing SSR in Typical Teaching Situations

SSR Orientation Workshops Agenda

SSR Implementation Workshops Agenda

SSR, Reading Interests, and the School Library

RICHMOND SCHOOL DISTRICT SSR PROJECT - ACTIVITIES LOG

(Compiled - December, 1977)

" Things always take longer than they do. "

Dr. Edward G. Summers
Faculty of Education
University of British Columbia

OCTOBER - 1977

Decision by Richmond School Board to implement and evaluate an SSR project in elementary schools.

Initial meetings held including McClelland, Chaiko, Summers to discuss the SSR project.

Preliminary reaction from elementary principals and teachers.

Summers invited as UBC consultant to project.

Literature review and synthesis completed to develop the conceptual base for the project and provide information on:

- descriptions of programs and previous research on USSR, SSR, HIP and derivatives
- attitudes as affective mobilizers in reading achievement, attitude measuring instruments, attitude change research, implementing an acceptance model of attitude development
- measurement and development of reading preferences, habits and interests
- field evaluation of innovation programs, models for treatment implementation in field research, focused interviews in research
- measurement of socio-economic characteristics, research related to the Blishen Socio-Economic Index for Canadian Occupations
- organization of elementary school library collections

Initial outline for project activities submitted.

Discussion of preliminary plan for implementing and evaluating an SSR program.

Plan initial meeting with principals to discuss project.

NOVEMBER - 1977

Meeting held with possible participating principals.

Elementary school population analyzed, treatment (Byng, Maple Lane, Bridge, Woodward) and non-treatment (Kidd, Kilgour, Bridgeport, Lee, Quilchena) schools designated.

Standardized instruments selected including Estes Attitude Scale, Metropolitan Reading Test; tests ordered.

Reading Preference Inventory, My Reading Bookcase, My Reading Record, Teacher Reading Rating Scale planned, written and printed.

Treatment school libraries visited, collections browsed, discussion with librarians.

Completed analysis of Stanford Achievement - Reading data (collected March 1977, Grades 5 & 7), treatment and non-treatment schools compared on Vocabulary and Comprehension raw scores.

Orientation Workshops planned for Byng, Maple Lane, Bridge and Woodward elementary schools.

DECEMBER - 1977

Orientation Workshops (1 1/2 hrs) held for treatment schools including Byng (Dec 8), Maple Lane (Dec 7), Bridge (Dec 8), and Woodward (Dec 6). (see Workshop Agenda for details)

Estes Attitude Scales, Reading Preference Inventory and Teacher Reading Rating Scales administered in treatment and non-treatment schools. Data collected from schools.

Non-treatment schools visited.

Implementation Workshops, to be held in January, planned for treatment schools.

Student Reading Rating Scales planned and written.

Estes Attitude Scales, Reading Preference Inventory results scored and tabulated.

Detailed treatment description " Implementing SSR in Typical Teaching Situations " planned, written, printed and delivered to treatment schools.

School library paper " SSR, Reading Interests, and the School Library " planned, written, printed and delivered to treatment schools.

Description of the approach to be used in the project for assessing attitudes planned and written " Measuring Children's Attitudes Towards Reading. " The Projective Assessment of Reading Attitudes (PARA) test planned and written.

Proposal for funding submitted to ERIBC by Richmond School District.

JANUARY - 1978

Conduct two hour Implementation Workshops for staff of treatment schools (Byng, Jan 12; Maple Lane, Jan 4; Bridge, Jan 10; Woodward, Jan 11). (see Workshop Agenda for details)

Begin SSR programs in treatment schools immediately after workshops.

Administer Metropolitan Reading Tests in treatment and non-treatment schools.

Administer Student Reading Rating Scales in treatment and non-treatment schools.

Administer Projective Assessment of Reading Attitudes in treatment and non-treatment schools to selected classes.

Survey the literature, plan instrument for assessing home literary environment, develop proposal for assessment of home literary environment and parent involvement in Richmond SSR project.

Organize reliability study, outside Richmond district, for Reading Preference Inventory. Develop reliability study using selected students from Richmond SSR project.

Score and tabulate Metropolitan Reading Tests.

FEBRUARY - 1978

Continue scoring and tabulating, organize pre test data.

Set up overall data coding and processing format.

Develop data analysis procedures related to project objectives.

MARCH - 1978

Schedule focused interviews with teachers, principals and librarians in the treatment schools.

Tabulate Teacher Reading Rating Scales.

Collect Blishen SES data from school records in treatment and non-treatment schools.

Collect teacher and school demographic characteristics for treatment and non-treatment schools.

APRIL - 1978

Monitor My Reading Record and My Reading Bookcase data collection in non-treatment and treatment schools.

Plan final stat design and data analysis for project.

MAY - 1978

Schedule final focused interviews with teachers, principals and librarians in the treatment schools.

Plan final data collection in treatment and non-treatment schools.

JUNE - 1978

June 1 through June 10 - collect all final data in treatment and non-treatment schools.

JULY, AUGUST - 1978

Score and tabulate all post treatment data.

Develop computer programming, run stat analysis.

Organize results, develop and write final report for the project.

IMPLEMENTING SUSTAINED SILENT READING

IN

TYPICAL TEACHING SITUATIONS

Dr. Edward G. Summers
Faculty of Education
UBC

The attached paper outlines the approach to Sustained Silent Reading (SSR) to be followed by the elementary schools participating in the Richmond School Board SSR Project.

December, 1977

IMPLEMENTING SUSTAINED SILENT READING IN TYPICAL TEACHING SITUATIONS

> The acid test of any reading program is whether or not the children in it or graduated from it read for themselves. There is little value in developing competent reading ability unless it is voluntarily put to use. One of the aims of any modern program is the development of not only skills but of habits of reading and a positive attitude toward it. The best means of evaluation of the success of a school program is not a score on a standardized test but rather the amount and quality of the materials children read. The development of worthwhile interests and tastes may be regarded as the crowning achievement of any reading program. A good program creates the desire to read and develops habits of reading not only for recreation but also as a means of personal development.
>
> (Russell, 1961; p. 362)

THE CONCEPT OF SUSTAINED SILENT READING

The concept of uninterrupted sustained silent reading (USSR) as an element in reading programs was first introduced by Hunt in 1970. Proponents of USSR, and its derivative SSR, include McCracken (1971), Petre (1971), Mork (1972), and Ganz and Theofield (1974). All strongly recommend the adoption of classroom and school programs in which children are allowed to read self-selected materials in school on a regularly scheduled basis to help the learner apply and transfer skills learned in isolation. Allington (1975) suggests that a USSR component is a necessary ingredient of any developmental reading program, just as skills instruction is, and recommends extending the concept of sustained practice to writing as well. Oliver (1970, 1970a) states that children have a right to enjoy reading as well as a right to learn to read and incorporates sustained practice in reading, writing and self-selected language activities under the generic concept of High Intensity Practice (HIP).

Although glowing reports on SSR projects appear regularly in the literature, actual research has been limited. Thus far at the elementary level, SSR in conjunction with skills training has been found to be as effective in improving skills as an equivalent amount of time spent in skills only instruction (Evans & Towner, 1975; Hanson, 1972; Oliver, 1970). Hanson (1972) and Wilmot (1975) reported positive affects for SSR on reading habits and attitudes with mixed results in terms of vocabulary and comprehension. Petre(1971) lauds an adapted form of SSR used in Maryland elementary and secondary schools but provides only anecdotal reports as data. In two recent studies Mikulecky and Wolf (1977, 1977a) found mixed results on achievement and attitude variables for SSR when incorporated for one hour per week as part of a required grade seven nine week reading course.

One can conclude a generally positive tone from the literature reporting SSR projects in terms of affective and cognitive benefits. Verbal reports from teachers and schools involved in SSR programs also tend to be positive in tone. However, beyond such _ex cathedra_ results, the research supporting benefits of SSR is scanty and still equivocal in terms of its measured effect on both cognitive and affective processes in reading. Thus schools intending to incorporate SSR programs need to carefully evaluate expected benefits for children and the place of sustained practice in the overall instructional program before embarking on widespread implementation.

The improvement of both cognitive and affective processes in reading is a high priority goal in reading programs in Richmond schools. The purpose of the Richmond SSR project is to develop a systematic approach to SSR, initiate it under controled conditions in Grades 5, 6 and 7 in four elementary schools, and evaluate its possible effects on cognitive and affective variables in reading. Implementing a program of SSR commits the school to providing a time for uninterrupted practice to stimulate personal reading and develop fluent readers. Many reading programs emphasize skill development but neglect to provide time for children to experience the art and joy of reading. SSR should be viewed as a complement to the existing teaching program.

PRINCIPLES IN IMPLEMENTING SSR

SSR requires no special teacher training or additional equipment. All that is necessary, in addition to having a good supply of reading materials, is a commitment by school staff to the concept that practice and example are vital in developing good personal reading habits. The method does depend for success on strict adherance to a number of principles.

(a) An SSR period is obligatory for the whole school. No compromise is allowable and no external forces should interfere with SSR. Absolute quietness should exist throughout the school during the reading activity.

- The SSR technique provides each child with an uninterrupted period during which material of one's own choosing is silently read.

- Creation of a school-wide reading environment for the SSR period serves as a strong attentional and motivating factor in reading.

- Children know reading is important because "everyone" is doing it. "SSR Period - Do Not Disturb" signs appear on many classroom doors.

The attentional processes in learning are enhanced when the total school population is simultaneously involved in reading activities.

(b) Everybody reads. Teachers, librarians, the principal and support staff all read adult material of their own choosing during SSR (plain brown wrappers are acceptable). They permit no interruption of their reading.

- The importance of the teacher joining children in reading cannot be overemphasized.

- The adult modelling process is a powerful attentional and motivating factor in the success of SSR.

- School principals should take a book under their arm and schedule themselves to read in some Grade 5, 6 or 7 classroom every period throughout the SSR program.

Many children have never seen adults, at school or home, read for pleasure and enjoyment. The effect can be striking if the model is provided consistently over a long period of time.

(c) All children read something. The teacher should first discuss the idea of SSR and create the climate for the scheduled SSR period. It is important that the children know their responsibilities and the procedures to be followed.

- Children and teachers silently read their selections for the predetermined period of time.
- No interruptions are allowed.
- Children who are really "into" a book sometimes are given permission to continue reading after the time period is finished.

Once the SSR program becomes routine (about two weeks), the teacher can become more involved in encouraging and guiding reading interests and book selection in preparation for SSR. The 14 category Reading Preference Inventory can help you get started by providing a profile of general reading interests for each child and the class as a whole.

(d) Reading materials must be readily available. In SSR the goal is to read and interact with print under motivating conditions on a sustained self-interest basis.

- SSR is easily thwarted if there is a hassle in obtaining materials of interest to read.
- There must be a wide range of reading materials available.
- No material is considered "too easy" to begin the process.
- The child with reading difficulties should be provided with materials that will maintain interest for the period. It does not matter if the materials are high-interest low-vocabulary readers, picture books, or magazines; each child should have the opportunity to read something of interest. Comics can be used to begin, if necessary to spark motivation, but the teacher should move students from comics to other materials as soon as feasible.
- It might be advisable for some children to have more than one book on hand if they anticipate finishing a book during the period.

Many schools have discovered inadequacies in their library collections when SSR begins. Books can come from anywhere: home, school, library, friends, public library, classroom library and the like. Keep the materials circulating in the school. Don't tie books up with a voluminous classroom library in some rooms and nothing in others.

(e) Use a timer for SSR. Schools have found an alarm clock or kitchen timer to be an excellent way to monitor SSR sessions.

- Wall clocks are terribly distracting and children have a tendency to become clock watchers. Some teachers "cover" the clock for the SSR period.

- Avoid breaking the attentional process, discourage asking the time. Once children get into books after the first few sessions such interruptions cease.

- SSR begins promptly, is carried out in silence, and runs the total time established for it without interruption. (Questions, messages from the office, student activity in the halls, voices over the PA system - all are out).

- Silent reading is the only acceptable activity in the classroom during the SSR session.

(f) Begin small and gradually increase SSR time. Children do not automatically sustain their reading for long periods of time. A planned, gradual increase in the length of the SSR period and the number of periods works best.

- Start small and be lavish with praise. The climate you create initially is vitally important for the long-term success of the effort.

- The SSR period should run about 10 minutes in length twice a week for the first two weeks.

- When students can sustain their reading, lengthen the period to 15 to 20 minutes and schedule it three to four times a week for the third and fourth weeks.

- Most intermediate classes will be ready, by the end of the fourth week, for a period of 25 to 30 minutes in length scheduled four to five times a week.

- Guard SSR sessions from interruption by other school activities. Continued systematic scheduling is necessary for the incremental effect of the method to build up to its maximum potential.

(g) No record keeping is allowable during SSR. A vital part of the SSR approach is the modelling being done by the teacher. One cannot model reading if one is busy marking papers or engaging in other activities. The students catch on fast and the effect dissipates. However, a certain amount of record keeping has to be built into the project to provide data so the effects of SSR can be evaluated. The form My Reading Bookcase has been developed to collect information on reading habits, tabulate books read to reflect reading interests, and motivate wide reading.

We ask teachers to be creative in obtaining this information as unobtrusively as possible outside the scheduled SSR time. It is important that teachers monitor and help maintain an accurate record for our data collection. Books actually read during SSR and outside the SSR period, either at school or elsewhere, should all be recorded with the appropriate information in My Reading Bookcase.

ENHANCING AND MOTIVATING READING

SSR can serve as the catalyst for reading and book activities of various kinds. Following are some suggestions for enhancing and motivating reading as adjunct activities to the SSR program.

(a) Teachers have the greatest potential for influencing reading habits and attitudes by their behavior and expectations. Teachers modelling positive reading behavior are as important as any technique, set of materials or method used. Teachers influence through what they are and what they do, through their own attitude toward reading, and through their attitude toward children as readers. Teachers can foster the belief that reading is a useful, fun, and highly valued activity. Set up occasional short periods of informal sharing of books and ideas; include both those being read by the teacher and those being read by various students.

(b) Utilizing student reading preferences and interests can influence development of positive attitudes. Knowledge of the reading preferences of individuals and the class as a whole can provide a reference point in guiding reading (See: Reading Preference Inventory).

- Make books available that reflect student interests and preferences and that are on appropriate readability levels.
- Set up interest centers in the classroom which collect library books, magazines, records, games and reinforcement materials geared to particular interests such as sports, animals stories, science fiction and the like.
- Help students pursue their interests in a variety of materials such as books, short stories and magazine articles. Establish students as experts in their interests and call on them for advice to other students.

(c) Make a fuss over SSR when it is first initiated. Develop a bulletin board display with titles which illustrate sports, adventure, geography/history and other categories from the My Reading Bookcase form. Create a poster which announces "SSR is Here". Create curiosity about what books contain and a desire to pursue reading silently and in a sustained fashion in an area of interest.

(d) Encourage children to share a book with, or recommend a book to, other children. Various creative approaches can be taken to share books. Set up an "I Recommend" spot on the bulletin board where students pin brief messages about "Why I liked this book and what it is about." Have children tell the funniest, the most exciting, or the saddest event in a book or story. Write an imaginary letter from one character to another in a book. Write a headlined newspaper report of some event in a book. Make a poster advertising a book read.

(e) Provide a good reading environment to increase the chances that children will read. Put the classroom library in an attractive setting with tables, chairs, bookshelves and a bulletin board for displays and sharing activities. About 50 books make a good classroom library.

(f) Allow students time to use the school library and browse through books.

(g) Encourage book ownership. Cut up old basals and other series and anthologies into separate stories. Have children develop their own illustrated cover and title pages. Book club membership is also a way of encouraging ownership.

(h) Reading to students is an important activity in developing and motivating interest in reading. At any level students look forward to being read to. Reading to children changes the pace of the day and supplements the SSR program. Establish a good climate. Select stories you like within the interest areas of the children. Know the story well. Keep interest high. Whet appetite for the reading sessions by reading only an episode first and scheduling the total story at a later date. Stories pre-recorded on tape can be used over and over again.

(i) Writing can be integrated with reading. Have one student write a beginning story, a second student can write the body, and a third can supply the ending.

(j) Discuss a "reading diet" with students. Mystery stories are dessert, comics candy, fruit cup is poetry, soup is current events, fish course is science and nature study, meat is biography and history/geography, vegetables are practice exercises in reading, milk is sports and hobbies. A balanced reading diet is best.

(k) Let a child share a special passage of a book with the class; describe a favorite character and tell what they liked about the book. Tell the story as if the child were the character.

(l) Have students who have read the same book organize a bulletin board/collage of the story. Make a mobile by choosing incidents from a character's life.

(m) Start a story but don't finish it. Let the children guess the end. Bring in a book or two, build them up and leave them on your desk for interested children to pick up.

(n) Have children select a famous person to research and report to the class.

(o) Let students find you reading when they come in in the morning.

(p) Don't forget the Reading Preference Inventory, find out what they like to read.

Many other reading and book activities can spin off the interest in reading generated by SSR. These follow-up activities often occur spontaneously and provide an ideal vehicle for sharing of reading by teachers and among students.

SAMPLE BOOKS RELATED TO THE CATEGORIES OF THE RPI ***

7

A knowledge of the reading interests and preferences of children can aid in guiding them to books and materials they might enjoy reading. The following list provides a number of sample titles of interest to intermediate children for each category of the Reading Preference Inventory.

ADVENTURE -

The 18th Emergency: B. Byers

Kidnapped in the Yukon: L. Woodward Burton

From the Mixed-up Files of Mrs. Basil E. Frankweiler: E. L. Koningsburg

Run For Your Life: Lines

HISTORY/GEOGRAPHY -

Johnny Tremain: E. Forbes

The Slave Dancer: P. Fox

Little House in the Big Woods: L. I. Wilder

Escape: S. Senje

ANIMALS -

Gentle Ben: W. Morey

Incident at Hawk's Hill: A. W. Eckart

The Grizzley: A. & E. Johnson

Macaroon: J. Cunningham

CHILDREN/FAMILY -

Are You There God? It's Me Margaret: J. Blume

Then Again, Maybe I Won't: J. Blume

Freaky Friday: M. Rogers

It's Like This Cat: E. C. Neville

SPORTS -

Football for Young Champions: R. J. Antonacci & J. Barr

How to Star in Basketball: H. L. Masin

Swimming: Harry Kramp

Lightening on Ice: P. Harkins

*** Compiled by Honey Halpern, graduate student, Reading Education, U.B.C.

HUMOR -

Tales of a Fourth Grade Nothing: J. Blume
Mishmash and the Substitute Teacher: M. Cone
Peter and Veronica: M. Sachs
Henry Reed's Journey: K. Robertson
The Lemonade Trick: S. Corbett

SCIENCE -

The Gull's Way: L. Darling
Insects in their World: S. Noguchi Swain
A Book of Moon Rockets for You: F. M. Branley
The Search for Planet X: T. Simon

POETRY -

Nicholas Knock: D. Lee
The Garbage Delight: D. Lee
Pop/Rock Songs of Earth: J. L. Walker
Crazy Flight: M. Cohn Livingston

FANTASY:

A Walk Out of the World: R. Nichols
Charlie and the Chocolate Factory: R. Dahl
The Phantom Tollbooth: N. Juster
The Ghost of Thomas Kempe: P. Lively
The House with a Clock in its Walls: J. Belairs

BIOGRAPHY -

Amos Fortune, Free Man: E. Yates
Freedom Train: The Story of Harriet Tubman: D. Sterling
With Love from Karen: M. Killilea
Child of the Silent Night: E. Hunter Fisher

TRAVEL -

Space Travel: W. Ley
Avalanche: A. R. Vander Loeff
House of Sixty Fathers: M. De Jong
The Two Uncles of Pablo: H. Bain

ROMANCE -

A Date for Diane: B. Cavanna
Seventeenth Summer: M. Daly
Daddy Long-Legs: J. Webster
I Will Go Barefoot all Summer for You: K. F. Lyle

NATURE STUDY -

Golden Hamsters: Zim

Crickets: Earle

The First Book of Stones: Cormack

In Woods and Fields: M. W. Buck

MYSTERY -

Encyclopedia Brown, Boy Detective: D. L. Sobel

Blue Mystery: M. Benary-Isbert

The Mystery of the Fat Cat: F. Bonham

Three Investigator Series: A. Hitchcock (Ed.)

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RICHMOND SUSTAINED SILENT READING (SSR) PROJECT

ORIENTATION WORKSHOPS

December 5,6,7,8, 1977

AGENDA

1. Discuss the Richmond SSR project, introduce individuals who will be involved in the project.
2. Introduce* the overall goal and objectives of the project.
3. Discuss some of the more recent published references on approaches to S.S.R. already presented as background reading for school staff.
4. Discuss the concepts of interest, reading preference, reading habits, attentional processes, motivational processes, comprehension processes, and effective acceptance as they will be defined and used in the SSR project.
5. Discuss the purpose and development of the Reading Preference Inventory and its administration to grade 5, 6, and 7.
6. Questions and answers.
7. Things to do prior to next meeting and beginning of the project.

* See attached PROJECT GOALS

RICHMOND SUSTAINED SILENT READING (SSR) PROJECT

PROJECT GOAL:

To develop a systematic approach to SSR, initiate it in a group of intermediate grade classrooms and evaluate its possible effects on cognitive and affective variables in reading.

To attain this goal the following steps or objectives will be undertaken.

(a) Establish a period of sustained silent reading on a regular basis throughout the total school with all staff participating and serving as reading models during SSR.

(b) Using grade 5, 6 and 7 classes and teachers, estimate the effect of SSR on attitude toward reading, reading achievement and reading preferences and habits of students.

(c) Analyze reading preferences among students in grades 5, 6, and 7; determine changes in preferences over time and differences in preferences by age, sex, reading attitude and reading achievement.

(d) Determine number and types of books read during the time span of the project for grades 5, 6 and 7.

(e) Estimate sources of reading materials and sources of book recommendations for grades 5, 6 and 7.

(f) Analyze the utility of the Reading Preference Inventory and establish its validity and reliability with respect to providing individual and class profiles of reading preference for grade 5, 6 and 7 students.

(g) Estimate the reading attitudes of a sampling of grade 5, 6 and 7 students using the Projective Test of Reading Attitudes and compare the results using more traditional paper and pencil approaches.

(h) Analyze teacher estimates of reading likes, habits and achievement using the Teacher Reading Rating Scales in comparison with other methods of obtaining reading atitudes and habits data.

RICHMOND SUSTAINED SILENT READING (SSR) PROJECT

IMPLEMENTATION WORKSHOPS

January 4 ---- MAPLE LANE

January 10 ---- BRIDGE

January 11 ---- WOODWARD

January 12 ____ BYNG

AGENDA

1. Discuss SSR as outlined in the paper "Implementing SSR in Typical Teaching Situations." Determine the schedule and procedures for implementing SSR in individual classrooms in Grades 5, 6 and 7. Discuss procedures for Grades K - 4.

2. Return and discuss the results for the Reading Preference Inventory and the derived individual student and class preference profiles. Discuss the paper "SSR, Reading Interests, and the School Library."

3. Discuss the Group Projective Test of Reading Attitudes (word association, picture interpretation, incomplete sentences) and use of the test in the project.

4. Discuss the My Reading Bookcase record form.

5. Discuss the Metropolitan Reading Tests.

6. Final discussion of the overall schedule of activities for the project.

7. Questions and answers on all aspects of the Richmond SSR project.

SSR, READING INTERESTS,
AND
THE SCHOOL LIBRARY

Dr. Edward G. Summers
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December, 1977

SSR, READING INTERESTS, AND THE SCHOOL LIBRARY **

Interest is an all important basis of learning whatever the level of schooling may be. Programs of sustained silent reading (see: Allington, 1975; Ganz and Theofield, 1974; Hunt, 1970; McCracken, 1971; Mork, 1972; Oliver, 1970; Petre, 1971) stimulate children's interest in books resulting in increased use of school libraries. When children visit the school library they usually have something in mind that interests them at that time. Seldom do they look for fiction or short stories per se. Rather they look for books about sports, adventure, hobbies, mystery or science fiction. However, elementary school libraries are often not organized to facilitate location of books of interest to children.

STUDIES OF READING INTERESTS:

The importance of the interest factor in reading has motivated numerous researchers to study children's reading interests and preferences. Such research has been reported for over 50 years. Almost uniformly, children demonstrate that they are interested in the content of books not the form (genre) of the book. What is in the book is what matters.

The need to begin where a child is in terms of what he wants to read about is obvious. Carefully developed studies of reading preferences and interests give teachers and librarians a starting point in guiding reading, stocking library shelves and organizing collections.

Studies of reading interests have taken many forms. Children have been asked to list the subjects about which they enjoy reading. Librarians have collected data on books checked out and categorized them. Children have been asked to suggest books for the library. Book lists have been presented to children and they have chosen best liked titles. Teachers (and parents) have been asked to list books for children based on their observations. Children have also been asked to keep diaries of their free reading over a period of time. Numerous questionnaires soliciting reaction to books, in various formats, have been devised. At times, fictitious titles have been used to avoid response bias. Children have also been observed in libraries and their book choices noted.

Although all these research methods have recognized limitations (see: Getzels, 1966; Tibbetts, 1975; Townsend, 1960; Weintraub, 1969; Zimat, 1966) certain persistent findings emerge. Reading interests are definitely related to grade level. Children two or more years below grade level, however, may express interests more in line with their reading age than their chronological age (Geeslin and Wilson, 1972). Age and sex rather than intelligence are the deciding factors in what children will read. The average thirteen year old and the above average thirteen year old will be interested in reading essentially the same kind of books. Girls enjoy many boys' books, but boys tend to reject most girls' books. However, more recent thinking asks why sex differences in reading exist and suggests that they result not so much from innate differences per se but stem more from societal conditioning of sex-typed behavior. (Tibbets, 1974). The overall reading interests of children have remained the same over time although book titles change. Year to year changes in reading interests are gradual.

** A number of the ideas in this paper have been adapted from an article by Small and Kenney (1975) which discusses organization of school libraries based on reading interests of adolescents.

The quality of reading and the amount done are closely related to factors such as number and kinds of books, magazines and newspapers found in the home; socio-economic level; and the education, occupation and leisure time activities of family members (Hansen, 1969, 1973; Callaway, 1972).

The critical reading years are the intermediate grades in terms of breadth and volume of reading. Reading activity never reaches the same peak or intensity again. The most striking fact about reading interest is the tremendous range of individual differences in the expressed interests of children and the amount of voluntary reading they do. This variation is evident even in fairly homogeneous groups with respect to socio-economic status, sex, and age.

CATEGORIES OF READING INTERESTS:

An extensive review of the reading interest literature suggests that book preferences for intermediate children can be encompassed within the following 14 categories. ***

1. ADVENTURE - (excitement, danger, thrills, action)
2. HISTORY/GEOGRAPHY - (past events, other countries)
3. ANIMALS - (Animal stories)
4. CHILDREN/FAMILY - (home and school life)
5. SPORTS - (games, hobbies,
6. HUMOR - (jokes, riddles, funny stories)
7. SCIENCE - (machines, science fiction, space, plants)
8. POETRY - (rhymes)
9. FANTASY - (monsters, myths, make-believe, fairy tales)
10. BIOGRAPHY - (account of a person's life)
11. TRAVEL - (trips, voyages, exploration)
12. ROMANCE - (boy-girl stories, love, novels)
13. NATURE STUDY - (outdoors, plants, animals, rocks, fish)
14. MYSTERY - (ghosts, secrets, detectives, suspense)

Short descriptions are provided for each category on the assumption that an "account of a person's life" would seem less difficult to interpret than Biography. Children who may misinterpret History/Geography might respond more positively to "past events, other countries." These categories appear consistently in studies of intermediate children and their reading interests, preferences and book choices (see References for reviewed studies).

TYPICAL ORGANIZATION OF SCHOOL LIBRARIES:

In spite of what is known about interests, Small and Kenney (1975) suggest that typical school libraries tend to be organized around a cataloguer's rather than a children's point of view; i.e. the Dewey system or some modification of it. Novels are found in Fiction with

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*** The Reading Preference Inventory developed for the Richmond SSR project is based on the 14 categories.

the titles arranged alphabetically by author. Short fiction appears under Short Stories, with collections arranged by authors' or editors' names. Biography and autobiography do have a category by themselves but are arranged within by subjects' names. The balance of the collection falls under decimal number; History (9990), Sports (790), Cars (600-700). Poetry is often found under Literature (800). Many librarians do modify the system but there is a definite difference in the way children think about books and the manner in which they are usually arranged in the school library.

LIBRARY ORGZNIZATION BY INTEREST CATEGORY:

When sustained silent reading and other reading activities make heavy demands on the library, the problem of matching books with reading interests and adequately stocking classroom libraries can explode. With some modification in the organization, children can more easily locate books of interest without searching self after shelf by author name. Books can be reorganized into content categories such as animal stories, sports, fantasy and the like. Small and Kenney suggest, in particular, that 798.9 (short stories, fiction, biography) be organized using a system of interest categories.

The 14 categories developed for the Reading Preference Inventory listed above could provide a useful frame of reference as the categories have been derived from research on reading interests of intermediate children. The primary focus of such reorganization should probably be the fiction collection since this area has perhaps the heaviest traffic within the library. Intermediate children show a clear preference for fiction (see Ashley's 1972 study, p. 27, for B. C. reading preference data in Grades 4 through 7). However, children are reading an increasing amount of non-fiction as compared to ten and twenty years ago. Thus it might be worth contemplating gathering all works together within a particular category - short stories, poems, general, non-fiction and the like. Children think in terms of content not literary type or decimal classification. Why not make it convenient for them?

A focal activity in SSR is the broadening of interests; encouraging not just the reading of novels but also of essays, biographies and other materials. Teachers build upon present interests and work actively to develop and extend interests. If student preferences and interests are the basis for guiding book selection, this should be reflected in the organization of the elementary school library.

As an example, Small and Kenney suggest:

> ......novels about sports, sports biographies and autogiographies, collections of sports short stories, and non-fiction works about the history and playing of particular sports (should) all be brought together under the general heading "Sports".

In similar fashion:

> ......fiction, biography and non-fiction works about cars and motors could be re-formed into a section called "Cars" or "Wheels" or "Getting There".

Other categories would become collections of materials now scattered in many places in the library, materials that "belong together" in terms of how children view books.

It would also be extremely helpful for teachers if books were organized by categories. A set of illustrative books could be quickly drawn together if fantasy, for example, is being featured in the classroom as an interest area. In addition, organization by interest categories simplifies the problem of providing a range of titles for room library collections. Interest in reading has been found to be highest when there are both room and school libraries. Organization by category simplifies movement of material from library to room and back. Teachers also often suggest that children go to the library to select books in areas of expressed interest. Organization by category enhances browsing materials on a particular topic.

Small and Kenney do not ignore that the re-organization of a library collection is no small undertaking involving hard work and difficult decisions. Rather than wholesale moving of books it might be best as a starter to develop some small-scale shelf collections under some of the interest categories to explore the utility of re-organization on a larger scale.

A major difficulty is that even relatively simple books can overlap categories. An adaptation of the principle of literary warrant, useful in developing classification schemes, enters here, "Where would most children expect to find this book?" Aim toward a reasonable location for each book. Organize the library by content and topic; children can practice alphabetization elsewhere. Recognition of the importance of accessibility is a major factor in organization of library collections for maximum use by children. Capitalizing on interests and providing appropriate materials can also help build positive attitudes toward reading. A child's attitude toward reading is a vital influence upon his reading success both now and in the future.

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RAW SCORE DATA

Columns 1-2 = Two digit student ID

" 3 = Treatment; 1 = SSR, 2 = NSSR

" 4 = School; 1 through 9

" 5 = Grade; 5 = 1, 6 = 2, 7 = 3

" 6-7 = Class; 1 through 65

" 8 = Gender; 1 = male, 2 = female

" 9-10 = Pre MAT Vocabulary

" 11-12 = Post MAT Vocabulary

" 13-14 = Pre MAT Comprehension

" 15-16 = Post MAT Comprehension

" 17-18 = Pre MAT Total

" 19-20 = Post MAT Total

" 21-22 = Pre Estes Attitude Scale

" 23-24 = Post Estes Attitude Scale

" 25 = Pre SRRS Well

" 26 = Post SRRS Well

" 27 = Pre SRRS Like

" 28 = Post SRRS Like

" 29 = Pre SRRS Much

" 30 = Post SRRS Much

" 31 = TRRS Well

" 32 = TRRS Like

" 33 = TRRS Much

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